



Virtual work experience in acoustics

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ABSTRACT

The Institute of Acoustics is in the process of organising a virtual work experience for up to 1000 GCSE and A-Level students. Unlike traditional workplace work experience, the virtual environment will provide an overview of the acoustics industry, an opportunity to engage with a large number of students from anywhere in the UK and a window to show young people the huge range of careers in acoustics. Through this initiative it is hoped that we will be able to inspire a pipeline of future acousticians. The work experience has been designed to run over two weeks, for 1 hour a day, and will include engaging content like videos, games, activities and live webinars. The modules will cover careers in consultancy, research, local authority, medical science, music and technology, and will cover the range of career pathways into our industry. This paper outlines the collaborative approach taken in creating and curating the virtual work experience programme. It gives an insight into structuring an inclusive and exciting experience for students and discusses the lessons learned from attempting to successfully showcase such an inherently diverse subject.

1. INTRODUCTION

Acoustics is hugely diverse and important field, contributing £4.6 billion per annum and employing around 16,000 people in the UK alone [1]. And yet, despite having wide ranging applications that impact many aspects of our everyday lives, it is not always an obvious career path for school leavers with many unaware of the potential opportunities on offer. There is also a lack of diversity within the industry; a recent voluntary survey by the Association of Noise Consultants (ANC) found that only around 15% of members from responding organisations were female and only around 9% were Black, Asian and minority ethnic (BAME). Similarly, only 13% of the membership of the Institute of Acoustics (IOA) in the UK identify as female and only 10% are BAME.

As such there is a pressing need to showcase acoustics to school age students and encourage a diverse and talented future generation of acousticians. Typically (though not exclusively given roles

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such as sound artists) this is promoted through STEM (Science, Technology, Engineering and Mathematics) initiatives in schools and colleges. Many professional acousticians are STEM ambassadors, and the IOA has a STEM committee to help coordinate and promote outreach activities aimed at young people. When the COVID-19 pandemic hit in 2020, and many school children in the UK were having to study from home, the IOA committee teamed up with the ANC to create a home schooling resources booklet focused on acoustic related activities and opportunities [2]. Appreciating that many students would also be deprived of face-to-face work experience opportunities led to the idea of a virtual work experience (VWEX) package, delivered online. As we ease out of restrictions imposed during the pandemic real world work experience opportunities are returning but an online experience has other advantages such as:

- The geographical spread of the outreach. Students no longer need to live close to a work experience provider. An online experience can be nationwide and target a diverse set of students.
- Showcasing the breadth of what acoustics can offer. Traditional work experience is, by its very nature, limited to the activities carried out by the host company but an online experience can encompass the work of a wide variety of firms and academic institutions.
- Providing a window into a host of working environments. There may be several logistical hurdles to pass to get students into certain sites and studios where acousticians work but through creating video content in those environments students can instantly be transported to these places and get an idea of what it is like to work there.
- The opportunity for in-depth Q&A sessions with acoustics professionals. Part of the virtual work experience package is a series of webinars in which students get to engage in meaningful discussions with a variety of acousticians over the nature of their work and their route into the industry.

This paper outlines the approach to creating the VWEX package, the issues that need careful consideration, the structure of the offering and a summary of the lessons learned from attempting to deliver a successful and engaging experience.

2. CONSIDERATIONS

Before the content within the VWEX could be formulated the nature and scope of the initiative had to be considered in greater detail. The following bulleted list highlights some of the issues we faced, together with how they were addressed.

- The content provider. A decision had to be made as to whether the IOA could facilitate the delivery of the VWEX or whether it was better to partner with another organisation who could aid in hosting and promoting the content. In this regard the IOA chose to partner with Springpod (<https://www.springpod.com/>) in delivering the VWEX. Springpod has experience in delivering successful VWEX packages through their hosting platform, for a range of high-profile companies and institutions and has an existing working relationship with many educational establishments allowing a level of outreach and participation that would be hard to achieve otherwise. A section of the landing page for the VWEX, hosted by Springpod, is shown in Figure 1.
- The age range of interest. This is an important factor to consider as it influences the level at which the content is pitched. In collaboration with Springpod it was decided to target the 15-18 years age group as this is the age range at which students make key decisions about their future career.



- Reaching the desired audience. Another consideration concerned the number of students to target and the level of diversity amongst those taking part. Whilst it is clearly desirable to maximise both of these things there are logistical and administrative challenges when it comes to hosting and promoting the event with greater numbers of students. The VWEX has been designed to run in two cohorts of 500 students each in the May and October half-term periods in the 2022 calendar year. The aim is to maximise the diversity of students within each cohort whilst simultaneously meeting the target numbers for participation.
- The length and format of the content. The VWEX needs to be long enough to give students a real appreciation of acoustics and the exciting opportunities within the industry whilst simultaneously being short enough to fit into the students' schedules and ensure the desired level of participation. From the knowledge Springpod has in hosting these experiences, a module structure amounting to 10 hours of student participation has been selected. With regards to the format, a combination of videos, text, pictures, activities and quizzes has been selected to keep students engaged throughout.
- The balance between learning about sound as an academic topic of study and learning about careers within the industry. As a work experience package the content is primarily geared towards careers within the industry but some areas and jobs are intrinsically technical in nature and at least a cursory background knowledge of sound and its properties is desirable to get the most out of associated content. Therefore, the first module of the VWEX is designed as an introduction to acoustics and as an opportunity to both cover some fundamental aspects concerning sound and present some key overarching organisations and institutions such as the IOA, the ANC and the UK Acoustics Network (UKAN). The following four modules then concentrate on careers in different parts of the industry while the final module focusses on gateways into the profession such as further education courses and apprenticeships.
- The breadth of topics and careers within acoustics to cover. The remaining challenge was to decide upon the range of acoustic related careers to focus on within the VWEX. On the one hand it was considered important to showcase the wide variety of exciting opportunities available but on the other an in-depth, quality introduction to certain aspects of acoustics would likely be more instructive and memorable than a brief, superficial look at everything. Ultimately the course is divided into four modules covering different applications of acoustics and the content within these modules is summarised in Section 3.

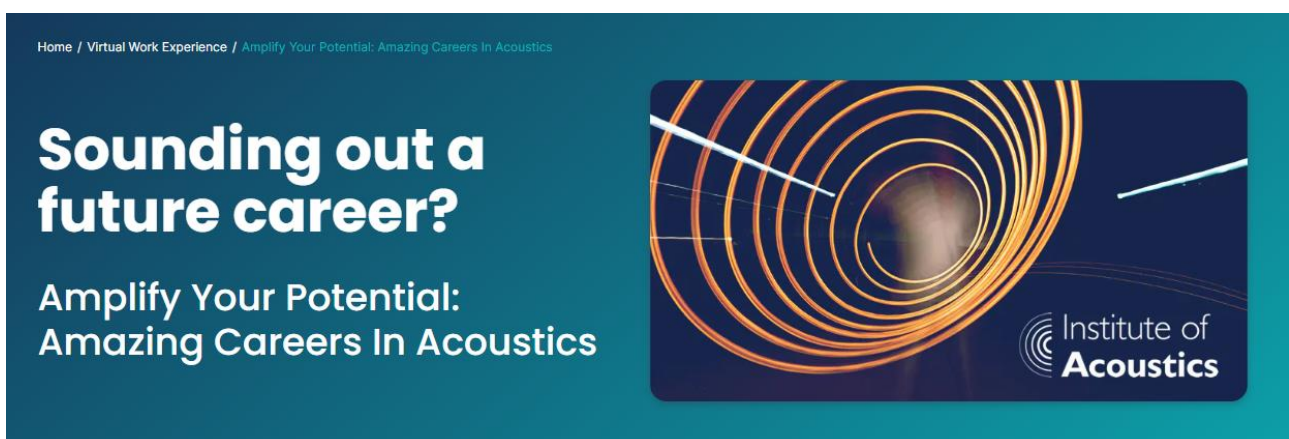


Figure 1: The top of the home page for the VWEX



3. STRUCTURE AND MODULES

Using the brief described in Section 2, members of the IOA volunteered to create and collate content from across the industry, which best represented the variety of work undertaken by acousticians. This set of information was then used by Springpod to organise the final programme. The VWEX is divided into six primary modules as described in the subsections below. Each module represents 1-2 hours content for the student digest. Whilst the structure of experience is described below there is some built-in flexibility with regards to the relative length and format of each section to account for the content that has been produced.

3.1. Introduction to Acoustics

The first module provides answers to some fundamental questions such as: what is an acoustician and what do they do? How does sound travel and how is it measured and modelled? What does the IOA do? What are my career prospects and the kind of projects I could be working on if I become an acoustician? This module thus provides a contextual framework for the remaining content, ensuring students are prepared to engage with the experience and not confused by the myriad of applications that follow.

3.2. Acoustics and the Environment

This module covers acoustics within our outdoor environment. It explains the many sources of sound all around us and the variety of noise sensitive receptors we look to protect. It explains why noise control and mitigation is important and how acousticians design these measures in practice. It introduces the importance of context through the concept of soundscapes as well as showcasing work on underwater acoustics for the protection of marine life.

3.3. Acoustics and Architecture

Acoustics is also important within indoor spaces and this module covers the basics of room acoustics. It explains how acoustics interacts with and influences architectural design and provides some real-world examples of the application of good acoustic principals with respect to indoor sound transmission and speech intelligibility from public address systems.

3.4. Acoustics, Innovation and Technology

Acoustics plays an important role in much of the technology used in our everyday lives. This module explores some of these topics and the careers involved in helping to:

- design microphones and speaker systems
- create the immersive sound experiences found in movies and games
- develop speech recognition used in voice activated systems
- create the ideal in-car sound
- minimise the noise generated by everyday appliances such as washing machines and hair dryers.

3.5. Acoustics and Health

There are several applications of acoustics within the healthcare industry and this module looks at how an understanding of sound can lead to new and improved treatments. It covers the role of audiologists and how they can help patients with hearing difficulties, how technology such as ultrasound is generated and used, as well as research into the role acoustics has to play in certain therapeutic treatments.



3.6. Getting Career Ready

The final module showcases the variety of pathways into the acoustics industry. It provides guidance for students on subjects they could study, further education opportunities and the associated requirements, the apprenticeship scheme in acoustics and how it is possible to transition into a career in acoustics from roles in other areas. The role the IOA has to play in supporting professional and future acousticians will also be explained.

Students will be assessed through games, quizzes and assignments throughout the experience, which will give them a way to test their knowledge of acoustics, as well as providing some feedback on how they are progressing. The modules will be supported by a series of four webinars in which students will get the opportunity to engage with industry professionals, discuss career paths and routes into the industry, and ask any questions they may have.

In addition to the specific work experience weeks in May and October half term, the recorded work experience programme, with no live content, will be available for students to complete over the summer. One advantage of this VWEX is that the enthusiasm for acoustics is not lost after the event has finished. The students that have found the virtual work experience interesting, will be given the opportunity to link up with in-person work experience roles, apprenticeship roles and directed to open days at universities. All students will be afforded the opportunity to provide feedback on their experience, which will be used to improve the work experience programme for 2023 and beyond.

4. CONCLUSIONS

Acoustics is a vibrant industry with many interesting roles and opportunities, but many young people do not know that careers in acoustics exist. This virtual work experience programme provides the acoustics industry an opportunity to reach out to young people that are considering their options, by bringing careers in acoustics to life in their homes and schools.

The content for the VWEX has been gathered by amazing volunteers from across the industry. Feedback from those that have been involved with the project has demonstrated that many consider it a fantastic initiative for the future of our industry. With some of the students being 18, it may be possible to see whether the VWEX has had a successful impact on the industry within the next few years. It is hoped that this will be a long-term initiative for the IOA, which will be continually improved year-on-year to capture the brightest talent for the future of acoustics.

5. ACKNOWLEDGEMENTS

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6. REFERENCES

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