

**AVOIDING A BOLT-ON APPROACH:
LINKING EMPLOYABILITY AND
SUSTAINABILITY IN THE CURRICULUM**



**Collaborative Award for
Teaching Excellence
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**THE SCHOOL OF NATURAL AND
ENVIRONMENTAL SCIENCES**



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EEWG: 8 Champions with responsibilities for the following core areas of activity: Digital and Information Literacy, Employability, Enterprise, Industry, Placements, Skills Modules, Students and Alumni, Student Mobility.

SUMMARY

Studying for an academic qualification at university and working in 'the real world' can sometimes be perceived as two very different experiences and it is commonly understood that a high level of subject-specific knowledge does not always translate into an ability to solve problems in industry.

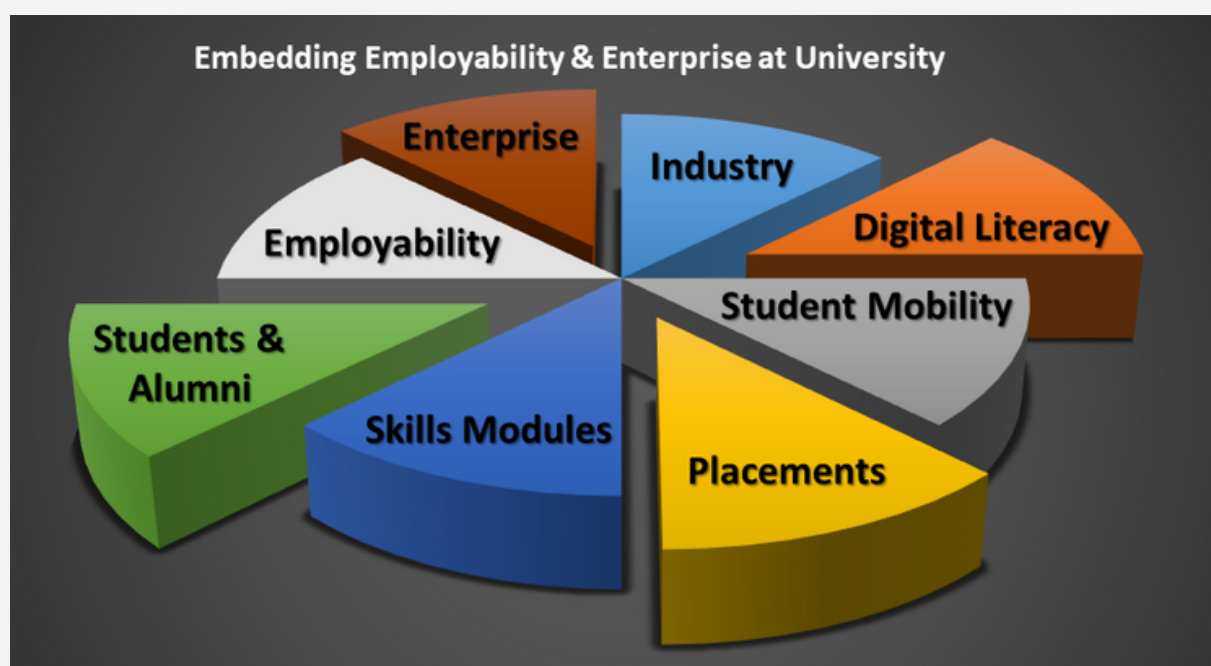
The School of Natural and Environmental Sciences (SNES) Employability and Enterprise Working Group (EEWG) at Newcastle University was created in 2018 to foster collaborative working approaches between academic staff from across the different subject specialisms within the School. Importantly, this working group also includes key colleagues from the Library, the International Office and the Careers Service, in addition to several industrial partners. The establishment of this working group was designed to enhance employability and enterprise provision across the School. It represents a relatively simple and transferable model that can be applied to other schools, units and universities wishing to coordinate and stimulate a more systematic approach to employability provision – provision which can otherwise be reliant on disconnected ad hoc initiatives. One of the core objectives of this working group is to enhance our students' employability and future-proof their skills. We aim to achieve this primarily via a focus on 'real world' problem solving.

The first important impact we had was the collaborative design of our Stage 2 Sustainable Solutions ACE2077 module. This module involves businesses pitching industrial challenges to cross-disciplinary teams of students from across the School. The challenges relate to the UN's Sustainable Development Goals. The module's success led to a subsequent second key output - the creation of a related, compulsory Chemistry Stage 3 module. Within this module students work with five industrial partners on broader 'Dragon's Den' type challenges. These challenges range from understanding intellectual property, to investigating next-generation pharmaceuticals, and even learning to put a valuation on a recently created University nanotechnology spin-out company. The third significant impact to have emerged from the Working Group to date has been the creation of our SNES Employability and Skills Canvas site. This site is used by the EEWG to promote specially tailored internships, placements and volunteering activities to our SNES students and incorporates a live graduate jobs board.

CONTEXT

Having led Chemistry's Study Abroad and Industrial Training Year programmes, our School of Natural and Environmental Sciences' (SNES) current Academic Lead for Employability and Enterprise had previously worked closely with the University's International Office and Careers Service. During the course of this relationship, both services had difficulties around getting their initiatives into Schools and securing student and staff 'buy-in'. At the same time, SNES was working with employers to increase the number of placement opportunities available to students. These employers were also encountering difficulties in identifying the best people within the University to talk to about their job opportunities and their potential input to university curricula. The Library was also finding it difficult to reach students with their digital and information skills training, as were student enterprise staff looking to promote student entrepreneurship. It quickly became clear that a whole range of exceptional opportunities were available to students, but partly due to their ad hoc nature and partly due to unfocused modes of communication, they attracted only the keenest students. As a result, these opportunities remained off the radar for the student cohort that would benefit from them the most.

On reflection, it was clear that the Library, Careers Service, International Office and our external industry partners faced similar problems and that by tackling and resolving them in collaboration, we could make significant gains across a range of key university objectives. These included expanding employability, developing transferable skills, enhancing student mobility and promoting industrial interactions. To achieve this, we required a vehicle that would bring these experts from different areas together to integrate and collaborate and this is how the SNES Employability and Enterprise Working Group (EEWG) came into being.



CONTEXT

The SNES EEWG represents a unique and highly collaborative way of working, which brings together experts from across the University's academic Schools, Careers Service, International Office, Library and Industry partners. The aim of the working group is to develop and promote employability and entrepreneurial initiatives which bridge the current skills gap and engender better graduate prospects for our students. In particular, we are concerned with equipping students with the problem-solving skills required for the industries of the future. Our initiatives are informed and strengthened by a range of reliable employability data sources and metrics. These include the Graduate Outcomes survey, Heidi Plus analytics, the Institute of Student Employers regular labour market and employer reports, and our close collaboration with professional bodies such as the Royal Society of Chemistry. Other key partners include the industrial umbrella organisations [NEPIC](#), [BioNow](#), and the [Fresh Produce Consortium](#) and Government Policy stakeholders, such as the [North East Local Enterprise Partnership](#), all of which allows us to feed into both local and national debates.

METHODOLOGY & IMPLEMENTATION

Importantly, all of the SNES subject areas (agricultural, biological and marine, chemical and earth, environmental and social sciences) were externally reviewed in 2019 as part of the Faculty review of programmes. This review was conducted by internationally recognised peers and an Independent Chair from the University's School of Computing Science. This review provided the information and evidence that the EEWG needed to influence subsequent programme review and restructuring. We did this by creating new employability-focused modules and activities which ensure that no student graduates without having engaged with industry.

Our process begins with our Employability Champion (SNES Careers Service Consultant) and Academic Lead for Employability and Enterprise for the School. These colleagues draw up an annual Action Plan for the School, highlighting student engagement with Careers Service activities such as 1:1 career consultations, University careers fairs and placement events, as well as identifying any gaps in skills and employability provision with respect to modules across the different year groups. These action plans also include important Graduate Outcomes data for the School, reporting on graduate level employment across the different graduate labour markets, student progression to further study, and performance comparisons with our Russell Group peers. The plans also cover levels of student engagement, employability provision embedded within modules, and graduate destinations. This collection of information helps us to identify areas of best practice and, more importantly, gaps in our programmes. This is set against the background knowledge of how well our graduates perform in the labour market and the industries they are most likely to transition to.

Agriculture, Food & Rural Development - Employability & Enterprise Action Plan

Action	Owner	Due Date	Status
Ensure former AFRD Should I do a Placement Year evening opened up to all Stage 2s in SNES (best practice and consistent messaging). Recruit 4-5 students returning from placement/year abroad with help of academic colleagues.	Placements Champion	October	Timetabled for AFRD, Biology and Marine Sciences; Chemistry next
Newcastle University Recruitment Fair will take place Monday-Wednesday October. DPDs to be informed of fair with view to promoting to students. • Business & Management Day, October, Civic Centre / Science & Engineering Day, October, Civic Centre	Skills Champion	October	
Environmental/Ecological Science careers day is being organised by Skills Module Champion for November. Employability Champion to provide support on day running speed interviewing, CV checks with employers.	Skills Module Champion	November	
Hold initial discussions to run Enterprise Challenge for students in SNES for academic year aiming to unite students from various SNES disciplines to work together to deliver a solution to a business case/challenge	Academic Lead	December	Discussions in progress

Strategic Employability & Enterprise Priorities:

- Increase visibility of work experience opportunities to students (esp. placements and Study Abroad for Stage 2s).
- Share best practice in relation to placements with colleagues in SNES. Ensure former AFRD specific *Should I do a Placement Year?* event is opened-up to all Stage 2s in SNES.

Latest news and focus areas this semester:

- New Academic Lead for Employability & Enterprise for SNES appointed (Chemistry).
- Task & Finish Group initiated on UG skills teaching across SNES - led by Skills Champion
- A new PGT Professional Analytical Skills module in SNES will launch - NES8004
- SNES formed School-wide Industrial Advisory Board.
- Careers Service Graduate Skills Framework currently being redesigned launch Semester 2

Communications: How careers information is to be communicated to students (e.g. emails through School, via BB careers community, blogs, etc.):

- Ad hoc communications aimed at students (events, targeted vacancies etc.) to be emailed to DPDs for distribution to students
- Careers Service posters to be displayed in the Agriculture Building to promote events
- Core module lecturers (for lecture shout out requests): Stage 1 and 2: Skills Module Lead, Stage 3 DPDs
- SNES Canvas community is also available (via [snes.learning.teaching](#)) for posting relevant information

1/15

in the 'Graduate Prospects' rankings for The Times Good University Guide (Agriculture and Forestry)

2

This birds-eye view paves the way for the next level of discussion with a wide array of service delivery colleagues. These teams include our Champions for Digital and Information Literacy (ie. the Faculty Liaison Librarian), Skills Modules staff (ie. academics with experience of developing skills modules), Study Abroad and Placements staff (ie. International Office Student Mobility Manager and University Placements Manager) and Industry representation (ie. Faculty Learning and Partnerships Manager). Which teams we speak to depends on the patterns of student behaviour that have been identified and where students are and are not engaging. We know for instance that a larger percentage of chemistry and biology students go on to further study compared to other subject areas in the School. Similarly, we know which programmes have a placement component and, therefore, already engage with industry. We also know which students engage well with our 1:1 Careers Service consultations (eg. Zoology). These champions, which are external to the School, can also bring the best practice they have observed from other subject areas within the University.

One initiative that resulted from these discussions, was a student-centred 'Should I do a Placement?' Question Time panel event. During this event, returning Year 4 placement students would encourage Year 2 students to go out on placement themselves by answering their questions and providing reassurance about some of their most common worries, such as leaving their friends at university and the world of work. By drawing on our graduate destination metrics, we know that these types of placement initiatives enhance student employability. For example, all of our chemistry students who graduated as the 20/21 cohort and undertook an industrial or study abroad placement are currently in graduate level employment. The inherent value of these initiatives is further evidenced by our students' feedback:

"In my opinion, I think that an industrial placement is the most beneficial thing a student can do during their degree" Alex, MChem Hons Chemistry with Industrial Training Year.

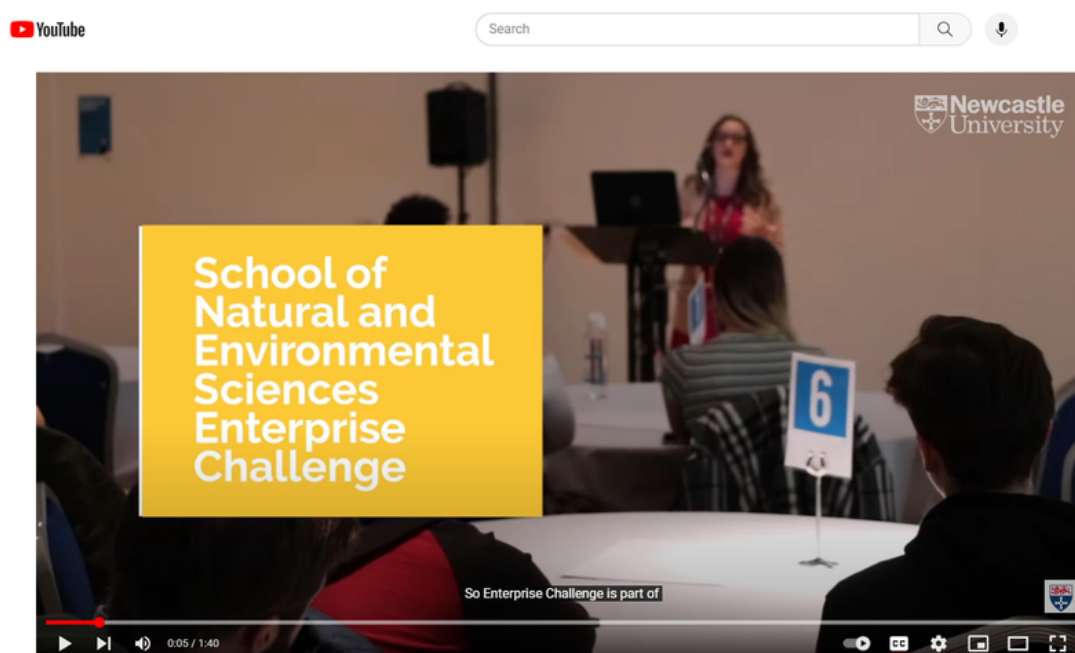
"Starting my brewery straight out of graduation wouldn't have been possible without working with both the Enterprise team and Chemistry department. Getting that support while on placement allowed me to switch courses and enter the Founderships programme while still graduating in Chemistry, rather than simply terminating my studies." Reece, BSc Chemistry with Study Abroad.

In recognition of this positive feedback from students and our understanding of the value of work-related learning, we were keen to ensure that all of our students could gain from a similar experience, even those students not fortunate enough to secure an industrial placement. As a result, our SNES Enterprise Champion (a dedicated Enterprise Advisor from NU Careers Service) worked with the Employability Champion and the SNES Academic Lead for Employability and Enterprise to create an Enterprise Challenge event in collaboration with AkzoNobel. During this day-long event, students worked in multidisciplinary teams on a real-world enterprise problem-solving task. The students were mentored throughout the day by employer representatives, School academics, the Careers Service and a number of SNES EEWG Champions. The event culminated in a Dragon's Den type pitch to all attendees followed by the award of prizes.

"I'd never really experienced the power of teamwork like I did today, it was absolutely brilliant. Everyone worked together and we ended up coming-up with ideas we didn't even know existed and meeting people in industry which I'd not really had a lot of experience of before" Sophia, Applied Plant Science.

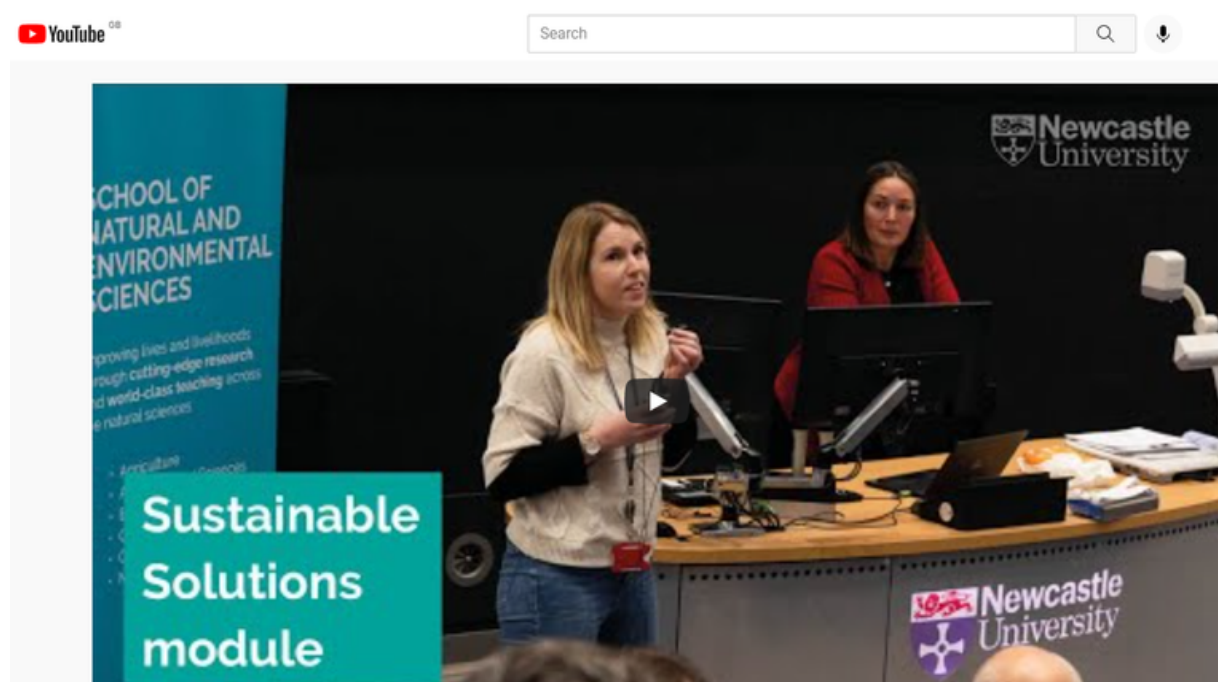
"This activity presents a real-world challenge from a real world company and gives students other skillsets that will help in diversifying their jobs but also get them on that career ladder", AkzoNobel.

[Find out more about our Enterprise Challenge](#)



Following the success of this optional one-day event, the Sustainable Solutions semester-long module (ACE2077) was created as a collaboration between academics and professional services of the EEWG and industry. This module helps ensure that the majority of SNES students now benefit from working with a range of companies on real world problem solving. It focuses on wider societal and environmental impact issues aligned to the UN's Sustainable Development Goals. Again, the students work in multidisciplinary teams to research the challenge topic, engaging in active learning to deliver potential solutions in the form of a written report and short video presentation. The module culminates in a 'Grand Finale' event attended by the companies themselves. During this event the winning student team is announced and informal networking between companies and students takes place. The module is currently delivered to over 200 Year 2 students from the agricultural, chemical, environmental and earth and social sciences.

[Find out more about our Sustainable Solutions Module](#)



It is the role of our Academic Lead, Industry, Employability, Skills Modules and Placements Champions to help build the necessary company relationships and bring industry on to campus. Sectors represented range from construction to food manufacture, environmental management to chemicals, and even overseas development agencies. These organisations then set the students real sustainability challenges relevant to their context. External partners are drawn from a range of existing University relationships, our networks of alumni and the School's Industrial Advisory Board and being proactive in meeting new potential stakeholders by participating in events organised by external umbrella organisations.. These interactions are an opportunity for us to canvas opinion amongst the different representatives in order to identify current skills gaps in a given sector and facilitate discussion on how we might address these gaps through changes to the curriculum. We also discuss new employability initiatives and modules and promote the offering of placements and internships.

ANALYSIS AND EVALUATION

Whilst it is too early to provide a detailed evaluation of the effectiveness of this embedded approach, there are already emerging indicators pointing to a positive impact. For example, we have seen an uplift in the number of students requesting a placement from 30 in 2019 to 83 in 2022. Similarly, we have seen an increase in students booking 1:1 careers appointments from 45 to 100 in the year following the inception of the Sustainable Solutions module. A few examples of positive student responses to this new module are provided below:

“At the start of this module I was unsure how it would be useful but much of my day-long GSK placement interview focused on these ideas – it was the best experience and I’ve been offered the role” Faye, Chemistry with Industrial Training Year.

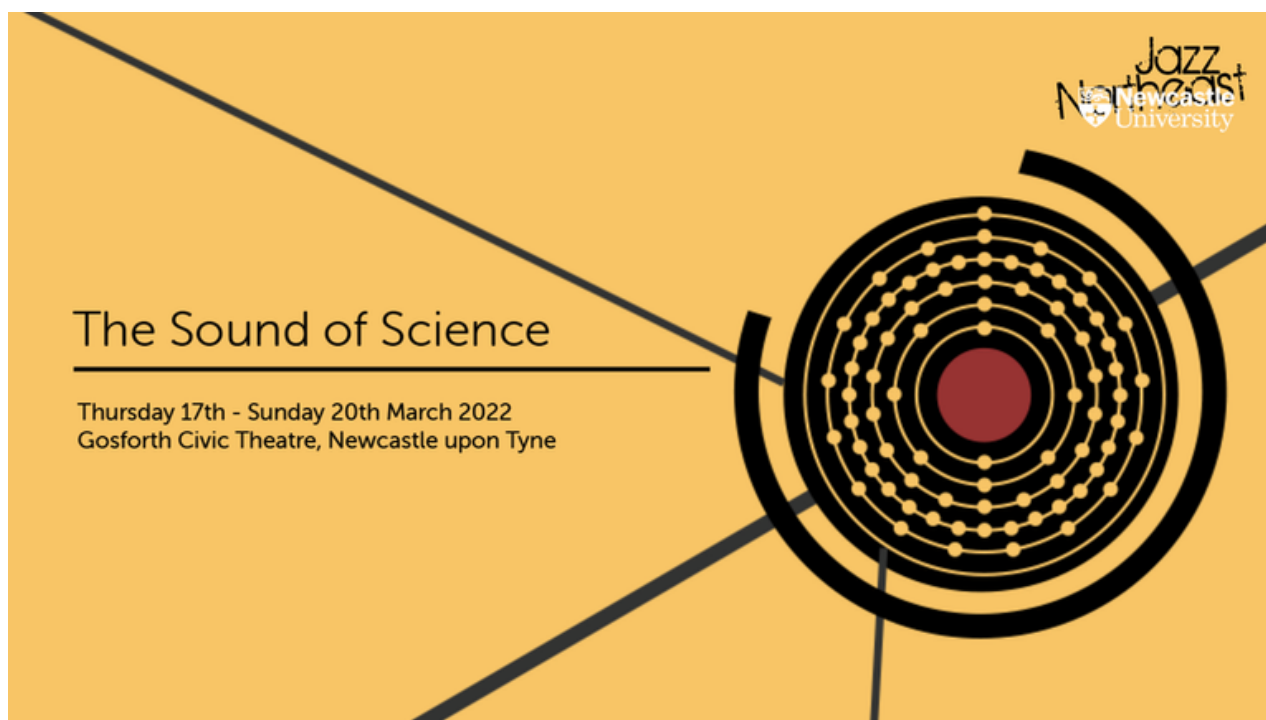
The module also provides an opportunity to incentivise disengaged students:

“Following the module, I booked a meeting with the Employability Champion to talk about my career direction and summer placements. Beforehand, I was still unsure on which areas I should be researching and planning to go into. All of a sudden, I have an aim and a direction and thoroughly believe this module has been the catalyst for this.” ACE2077 student.

The ACE2077 Sustainable Solutions module was presented as part of our paper ‘Avoiding a ‘bolt-on’ approach: Linking employability and sustainability in the curriculum’ at the Future of Work and Skills Conference in 2022 and a paper entitled ‘The Pizza Model: Working at the Academic and Industry Interface to Improve Graduate Employability’ was given by the Academic Lead for Employability and Enterprise at the Horizons in Stem Higher Education Conference, 2023.

Another wider spin-off of this early success has been the creation of the Year 3 ‘Professional Development and Employability Skills for Chemists’ module ([CHY3012](#)) in 2022. This compulsory module brings in five different companies each year to set and assess Dragon’s Den style challenges of relevance to industry. This year’s ‘Dragons’ consisted of a global pharmaceutical giant, a university spin-out SME, a patent law firm, a dairy nutrition business and a rapidly expanding local pharmaceutical company. Typically, these employer contacts are also alumni.

As a result of the collaborative nature of the EEWG, these modules and activities are never run in isolation from each other. Rather the companies interested in engaging with us are offered the choice of providing sustainability challenges, which span the School’s different scientific subject areas in Year 2 on module ACE2077, or alternatively they can offer more focused chemistry-specific projects in Stage 3 on CHY3012. This is also the stage when employers start looking for potential graduate recruits. Other smaller scale pilots and projects - such as the Enterprise Challenge - are also options for companies to get involved with; and finally, companies are encouraged to consider offering student placements and internships.



A third key output of the EEWG is the SNES Skills and Employability Canvas website. This website has had over 242k views since its launch in September 2021 - with 37% of students in the School accessing the community in its first week alone. Our EEWG VLE also provides the opportunity for colleagues and students to see themselves as partners in the process by providing regular opportunities for them to shape this community and influence the wider activities of the Working Group. For instance, one colleague created a video on the University farm showing how the different subjects contained within SNES are all related. It also highlighted the existence of graduate jobs from sectors that the students might not be familiar with. Another EEWG colleague worked alongside two industrial placement students as panellists at the Sound of Science Jazz Festival, which aimed to make connections between musicians and student scientists.

The EEWG's Academic Lead for Employability and Enterprise is also a member of BioNow's Industry Engagement Sub-Group which 'aims to create an industry narrative to influence Higher Education provision on the importance of academic and vocational skills required by industry'. This sub-group was influential in helping the EEWG to shape their 2022 objectives of 30 new industrial placements and 100 'speed-dating' industry/student interactions. The EEWG's Industry Champion is similarly involved in the North East of England Process Industry Cluster, NEPIC.

"Your working groups sounds really amazing - I've never come across anything like that before, but I found it very inspiring. You've managed to link new technical skills (digital, sustainability), transferrable skills and industrial/international experiences into one integrated strategy" Royal Society of Chemistry's Head of Research and Innovation

REFLECTION AND NEXT STEPS

Five years after its inception, the EEWG is confident that our collaborative way of working has allowed us to develop initiatives that have had a positive impact on the employability of our students. The group has also raised our visibility and effectiveness beyond our School. We continue to use metrics, databases, industry feedback and the student voice to identify any gaps in our own employability and skills provision. We also proactively network with the wider University community to allow other Schools and Institutes to learn from our own experiences and use them to introduce a greater element of this type of teaching and learning into their own curricula.

Beyond this, we attend national conferences to disseminate our findings and observe the best practice of others. We are currently making inputs to the BioNow Skills Interest Group's work on addressing their skills gap and the Royal Society of Chemistry's Committee for Accreditation and Valuation of international degree programmes. We are also currently in the process of writing a paper on the EEWG journey to date.

The comment below from one of our Faculty Education Managers demonstrates the wider impact of our early work through the EEWG:

"I have seen the Working Group move from an early prototype to a fully functioning method of embedding employability skills and opportunities into SNES. The model has helped bring a number of, at times, divergent subject areas together and given them an easy-to-use framework. There have already been a huge number of successes and other Schools in the Faculty and the wider University are interested in rolling out a similar structure." SAgE Faculty Education Manager.

As a final positive note to end on, in August 2023 the EEWG were announced as one of the national winners of the AdvanceHE Collaborative Award for Teaching Excellence (CATE), which recognises and rewards collaborative work that has had a demonstrable impact on teaching and learning in Higher Education:

<https://www.advance-he.ac.uk/awards/teaching-excellence-awards/collaborative-award-for-teaching-excellence/winners>

REFERENCES AND HYPERLINKS

YouTube videos:

[Find out more about our Enterprise Challenge](#)

[Find out more about our Sustainable Solutions Module](#)

Conferences:

<https://northumbria-cdn.azureedge.net/-/media/sls/graduate-futures/fwsc-event-programme-final-sept.pdf?modified=20220913095728>

<https://ukstemconference.com/2023-conference-programme/fco>

Collaborative Award for Teaching Excellence (CATE):

<https://www.advance-he.ac.uk/awards/teaching-excellence-awards/collaborative-award-for-teaching-excellence/winners>

External Partners and Stakeholders:

<https://bionow.co.uk/>

<https://www.rsc.org/>

<https://www.nepic.co.uk/>

[Homepage | Fresh Produce Consortium](#)

[Home - North East Local Enterprise Partnership \(northeastlep.co.uk\)](#)



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