Ondata Research

Exploring Connections: Career-focussed events Case Study

Laura Thomas, September 2024

1. Exploring Connections: Career-focussed events

In June 2024, the Physics Mentoring Project held an event for schools at Coleg y Cymoedd in Nantgarw. Three schools attended, two of which had participated in the mentoring project in 2023/2024 and one school which had not. The groups of learners attending from the schools who participated were a mixture of mentees and non-mentees. The event was an opportunity for teachers and learners to find out more about physics-related opportunities available to them locally. A number of employers ran workshops during the event, which learners moved around in a carousel style across the day. The employers participating were Axiom, Balfour Beatty, Bute Energy, GE and Space Forge. Companies were keen to highlight the different routes into careers and apprentices also took part in the sessions with learners.

Each session typically involved some kind of physics-related hands-on activity. For example, Space Forge, an advanced materials company based in Cardiff, opened with a description of their satellite technology and goals for operation before setting the learners a rocket launch challenge. The Bute Energy session focussed on electricity supply and used a range of demonstrations to remind leaners of the relevant parts of the curriculum they would have already covered before going on to set them a task closely linked to the type of work undertaken by the company in relation to location of wind farms. Across all of the sessions, learners got to meet a range of people in a variety of roles. It was often the case that staff from the different companies were keen to highlight their route into their career, which was not necessarily what the learners would have expected.

One teacher commented that *“All sessions included activities which were simple but helped make the science in the workplace come alive”* (Teacher post-event survey). Alongside these sessions, learners were also taken on tours of the Coleg y Cymoedd campus and this experience was commented on by another teacher*: “The learners enjoyed the whole day and all the activities. They particularly enjoyed the hands on activities. Several learners have mentioned how much they enjoyed the visit to the engineering workshop.”* The tour was so popular with students that an additional opportunity was added on the day.

Based on the responses to the Physics Mentoring Project's pre-participation survey in 2023/2024 there is a strong expectation that the career route to be followed is that of A-levels and university. Those who answered that they had a career in mind were asked to indicate what route they planned to take. The most popular option was A-levels or College followed by university. Only a small proportion indicated going into an apprenticeship (3.6%, n=42 of respondents to pre-participation survey) or directly into a job (1.5%, n=18).

Response	n	%
Yes	1183	46.7%
No	545	21.5%
I don't know	803	31.7%
	2531	

Table 1. Pre-participation survey responses to the question "Do you have a career in mind?"

There is still a significant amount of uncertainty amongst respondents about what career they intend to go into with over 50% indicating no or they were unsure.

For those who participated in the Growing Connections strand of the project as mentees, they were asked about the specific sector they were interested in going into. The following Table outlines the areas of interest for the mentees and this has been split out in terms of gender and we can see very clear differences between interests.

Sector	Female mentees	Male mentees
Accountancy and financial services	0.0%	4.2%
Armed Forces and Security	2.9%	12.5%
Construction	2.9%	0.0%
Creative Arts and Culture	8.8%	0.0%
Digital sector	2.9%	16.7%
Engineering	2.9%	8.3%
Health	41.2%	12.5%
Hospitality, leisure and tourism	2.9%	4.2%
Legal sector	0.0%	8.3%
Public Services	2.9%	4.2%
Science and research	17.6%	8.3%
Teaching and education	8.8%	8.3%
Transport and logistics	2.9%	12.5%
Vet	2.9%	0.0%

Table 2. Career interests of mentees by gender[1]

The most significant difference can be seen for the health sector where over 40% female mentees have an interest in a career in this field compared to 12.5% of male mentees. For

[1] Sectors coded according to those described by Careers Wales: https://careerswales.gov.wales/job-information/industry

male mentees, their interests were more broadly spread across the sectors whereas the female mentees' interests were more concentrated.

Returning to the Exploring Connections event attendees, they were asked about their own impressions of the relevance of physics to their everyday lives and whether they will use physics in their future careers. Learners were asked about whether they thought they would use physics in their future careers and those who responded positively to the survey commented that they were considering careers in engineering (electrical, formula one) and medicine. For some others they weren't sure about which exact career but that they felt *"physics is crucial and is practically required for a lot of things"* (Learner post-event survey).

At the beginning of the event and then again at the end, attendees were asked to indicate whether they thought physics was useful in everyday life by responding to a 1 to 10 scale where 1 was not at all useful and 10 was extremely useful. At the beginning of the day, the average of the responses (n=19) was 6.6 and at the end of the day this had increased to 7.3 (n=18). When asked whether they had changed their minds about their answer, there were several who indicated that they had:

- *"It has changed due to the certain things I have learnt today and I've enjoyed myself thoroughly thank u".*
- *"It's more useful as it can protect others in jobs such as aviation."*
- *"I have become more aware of how and why it is utilised in everyday life".*
- *"After viewing the multiple activities, I have been shown that physics is much more useful in practically everything".*

The range of sessions and the interactions with the employers has helped to shift their perspective of physics. The majority of respondents thought the employer activities were "Excellent" (n=10, 56%).

- *"They really sparked my interest [in physics]".*
- *"I felt that the employer activities were interesting and gave good context on the field of physics as a whole. I also feel like overall the event was very well planned and executed."*

This position was consolidated through feedback received from teachers: *"The learners looked at science in a wider view. Speaking to more people who have developed these skills and applied them in their life has been useful ."* (Teacher post-event survey).

During the day focus groups ran with mentees and non-mentees in order to get feedback about the event. The non-mentees enjoyed the sessions with employers just as much as those

who had been part of the mentoring programme. The non-mentees particularly highlighted their enjoyment of the different challenges across the sessions and the opportunities to be creative. Those participating in the group discussion already had clear ideas about what careers they wanted to go into and didn't feel that the sessions themselves were swaying them towards a physics-related option, although the did say they felt more positive about their perceptions of physics and acknowledged that they felt there was quite a negative attitude towards physics amongst their peers in general as it was felt to be difficult.

Following the event, learners were in a position *to "make a more informed decision about learning pathways, perhaps encouraging them to study physics at a higher level"* (Teacher post-event survey) and the mentees commented in their focus group about how helpful it was to be able to meet people who had gone through alternative routes. In terms of attendance at other careers-focussed events, apart from this one, the mentees had only attended one other engineering event in Cardiff.

The contribution to the day from the mentors was also acknowledged by the learners, with one person commenting in the feedback that "*The mentors were highly knowledgeable and passionate in what they do also made everyone feel really comfortable".* Teachers were very positive about the experience and would be keen to attend another event like it in the future: *"the kids loved it and have been talking about it for days"* (Teacher post-event survey).

The event has been an excellent opportunity to raise awareness of the alternative routes into physics-related careers with the hands-on activities and interactions with local employers being received very positively by teachers and learners.