Ogden Outreach Officers
Programme Report 2019-20

Introduction

The Ogden Outreach Officers (OOOs) programme gives up to 50% FTE funding to individuals based predominantly in physics departments in UK universities. Their role is to provide physics support and university access to local schools. This must be matched with professional outreach time, the focus of which is decided by the universities and can consist of anything, including widening participation, impact for the REF and more. There is usually overlap between both sides of the role, and they are hard to separate. As a result, OOOs have been asked to report on their whole roles, as well as the work they are aware of taking place by other members of their departments (whether or not the Officer was involved).

The programme has run since 2008, although significant changes were made to the programme from September 2018. The Trust currently funds 17 OOOs on this programme, with a further two universities expected to join the scheme in January 2021. The universities of Edinburgh, Keele, Liverpool, Northumbria and UCL have entered their final year of funding and we are working closely with each of them to ensure the continuation of the Outreach Officer role.

We have had confirmation from the universities of Kent, Leeds, and Sheffield that their Officer positions are permanent and will continue after the cessation of Ogden funding. Funding for the Officer at the University of Portsmouth has ended but the position has been made permanent. Funding for the universities of Nottingham and QMUL has been paused due to early retirement at the former and departure at the latter. In addition, funding is due to be paused at the University of Surrey in November due to maternity leave, but we are expecting maternity cover to continue the outreach work there.

20 universities had active OOOs in the academic year 2019-20, all of which have reported. The onset of lockdown enforced by COVID19 hit outreach events markedly this year, particularly from March onwards, which is historically the busiest time of year for the Officers. At least 205 events which had been initially scheduled were forced to be cancelled. These included 5 events for the training of undergraduate students, 21 students for teacher CPD, and 179 events for school age students.

Despite the numerous cancellations, the Outreach Officer network was able to run 789 events (an increase of 30 from last year), reaching 56,740 people (an increase of 3,412 from last year). This is most likely due to more Officers reporting (last year only 13 reported whereas every funded Officer reported on their activities this year) and a slightly wider overall network than last year (we formally had two more Officers on the programme this year). Overall, despite COVID affecting outreach activities for almost half of the year, the numbers of activities remained comparable to last year.

Under the Ogden strands, we recorded the following numbers this year (last year's numbers are recorded in brackets for comparison):

School children	**Teachers**	**University students**
Events: 585 (566)	Events: 86 (43)	Events: 181 (77)
Schools: 911 (13,518*)	Teachers: 1,042 (830)	Students: 2,292 (1,635)
Pupils: 53,406 (42,943)	Schools/Colleges: 492 (331)	

**This number is not reflective of the different schools reached, rather the number of times schools attended events.*

School children

493 events were targeted at schools, reaching 911 schools and 40,065 pupils, spread across all ages from early years up to 18. In addition to this, 39 activities for community groups and 53 for the general public this year were arranged, attended by around 14,230 people (including school students). Overall, these activities saw a total of 1,430 teachers and 10,591 family members and members of the general public attend too. The majority of these events (72%) were established activities, with 149 being run for the first time.

Most of these activities (501) were free, though 14% had an attendance charge. Activities which were charged for varied from astrodomes, observatory tours, in addition to some workshops (across multiple days) and science festivals, and predominately took place on university campuses or in public spaces.

Since the new programme was updated in 2018, we have asked Officers to focus on multiple interventions with the same groups of students, as one-off events have not been proven to have an impact on increasing the numbers of young people choosing to take up physics post-16. We are pleased that the majority of Officers have been able to achieve this, with the majority choosing to carry out workshops and hands-on activities. 53% of the activities were part of a series of repeat interventions compared with those which were one-off events.

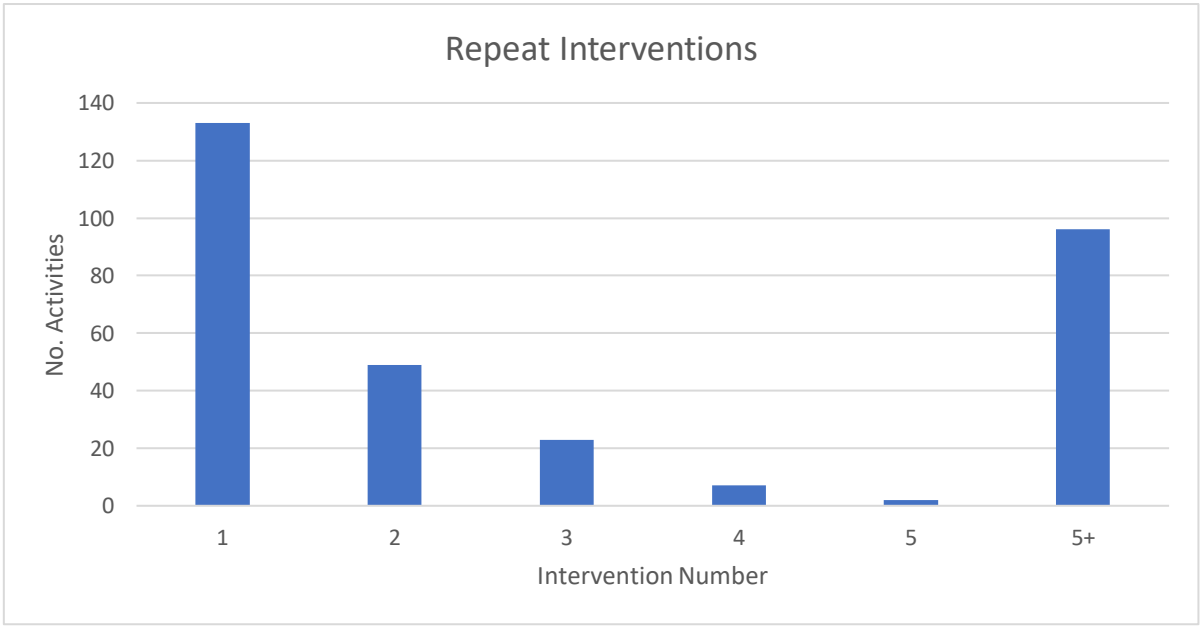

Chart 1: Breakdown of Repeat Intervention Events in a Series of Events

Chart 1 shows the number of activities which were part of a series of repeat interventions. A number of activities had to be cancelled due to COVID19, otherwise we would have hoped that every repeat intervention would have covered and completed at least three sessions (the high proportion of activities which were only able to run a single session demonstrates how many repeat interventions had to be cancelled). It should be noted that the high proportion of activities which were more than 5+ in a series is due to several Officers carrying out a sustained Isaac Physics intervention (mainly online) with a number of students from a large group of schools, which has also yielded significantly positive results: *"66.7% state they have progressed solely due to online sessions, other 33.7% state their progress was combination of school and online sessions."*.

Departments work with all age groups of young people, but the Trust is pleased to see the high levels of support for our key audiences of younger people, as shown in Chart 2. Research shows that targeting younger age groups, particularly across KS2 (ages 7-11) and KS3 (ages 11-14) has more of an impact, as young people have often made decisions about a particular career direction by age 14, with many young people identifying science as 'not for me' by then. We would therefore continue to encourage the Officers to engage with younger students, particularly those in the 11-14 bracket.

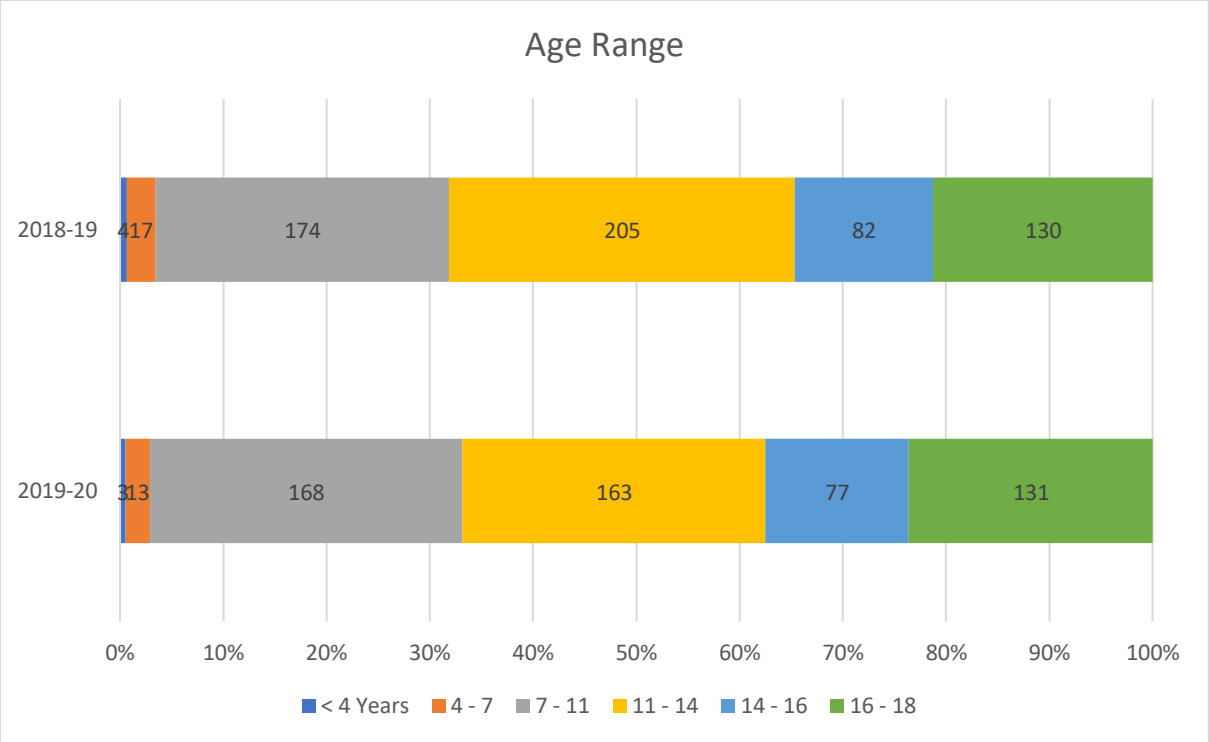

Chart 2: The percentage of overall events with targeted age groups

The comparatively lower level of activity for 14-16-year olds reflects the difficulty of working with this group due to the school focus on the high volume of curriculum content for the students' exams. Schools thus struggle to find time for extra-curricular activities. The comparably high number of activities for the 16–18 age bracket is reflective of the universities' desire to focus on recruitment; whilst this is not a problem in and of itself, we believe working with younger age groups widens the overall pool of young people from which universities can draw their first year students.

In addition to increasing the focus on targeting younger age groups, we are encouraging Officers to work with schools with higher proportions of pupils on free school meals (FSM), as this is a strong indicator of whether the students in a particular area are more or less likely to study physics post-16. Chart 3 shows the schools grouped by banding of percentages by decile, where their FSM percentage was recorded.

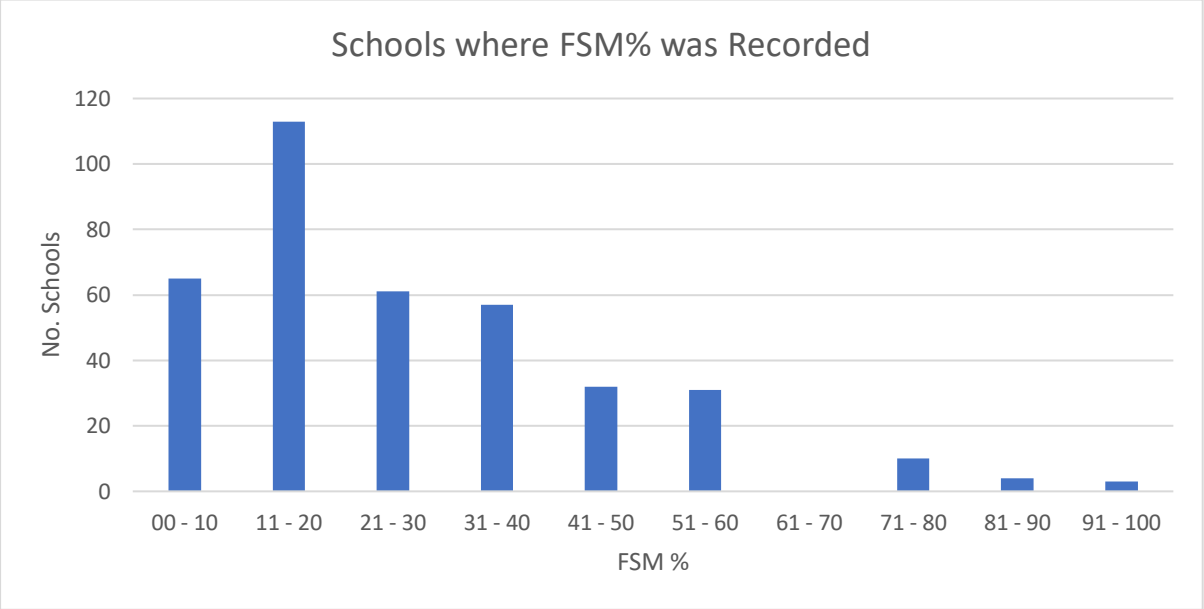

Chart 3: The numbers of schools where FSM was recorded

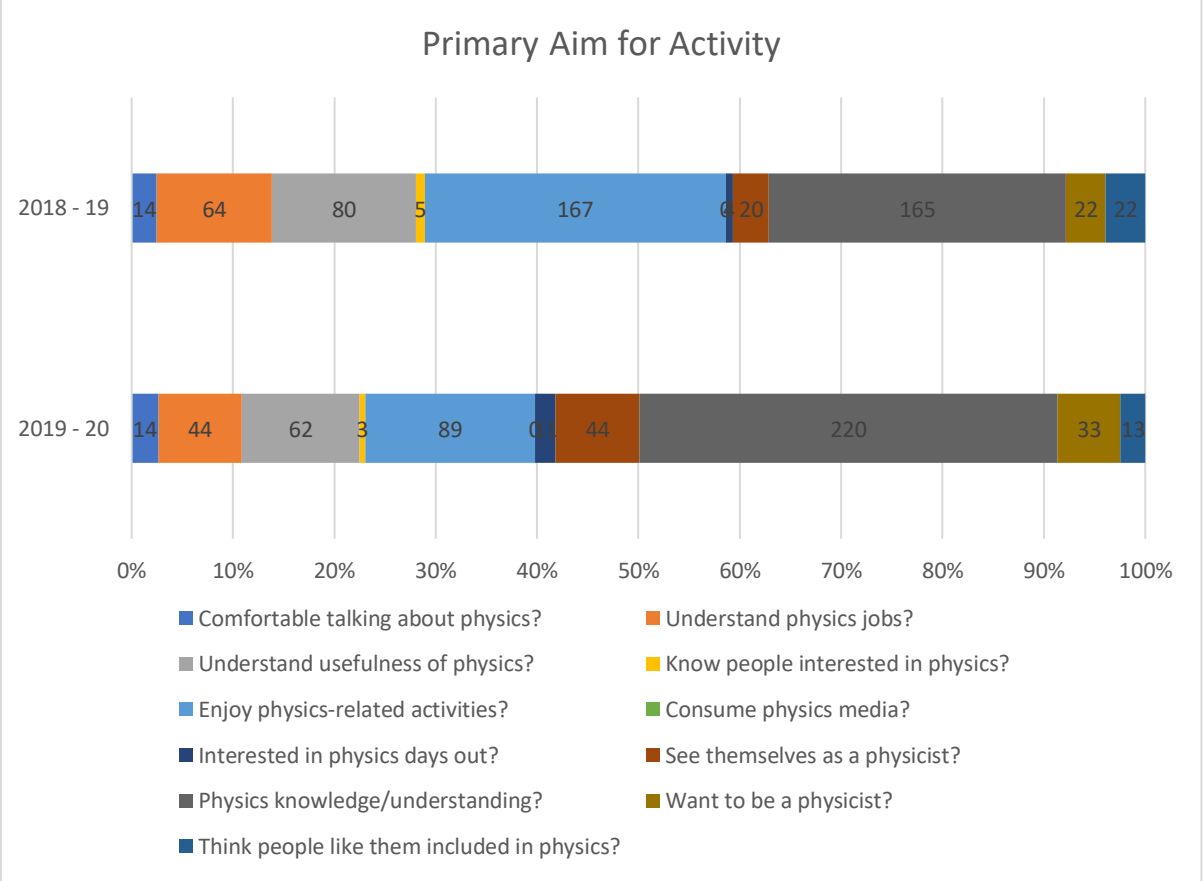

Chart 4: The primary aims for each activity by percentage of overall activities

As for last year, we asked our Officers to record their primary aims for running each activity, shown in Chart 4. Overwhelmingly, events were run to gauge whether the participants enjoyed or understood physics. This year, we saw a notable increase in the number of activities focused on increasing the confidence of young people in seeing themselves as physicists and whether they wanted to become physicists.

Similar to last year, the majority of activities focussed on physics knowledge enhancement and understanding. Reflective of the multiple roles that many of the Officers have, some activities also focussed on mathematics, engineering, chemistry and forensic science. There were a number events looking at gender, careers and university access, and a few other activities focussed on building students' practical and scientific skills.

From activities where Officers carried out some form of evaluation, we were able to gauge that students enjoyed the activities: *"I wish all our science lessons were like this!"*, and that both their teachers and parents were overwhelming positive about the activities: *"They have spoken about university in the days since our visit and how excited they are to go."*.

Where the aim was to raise awareness of careers in physics and studying physics post-16, the activities have appeared to be overwhelmingly successful: *"Opportunities like this will broaden their experience and hopefully raise the aspirations of some with ideas and pathways they had never considered before. Thank-you for making their first interaction with a real physicist a positive experience... I know that it opened their eyes to careers and pathways they simply do not know about."*, and the students attending sessions on studying physics as a female came away more confident that people like them could become successful physicists: *"I felt comfortable and felt like women are finally having the chance to be seen just as good as any other scientists"*.

This year, there was also more reference to how much the attendees understood or knew about physics after the sessions: *"100% of the participants who returned feedback forms (28/31) completed a couple of days after the visit were able to report back on at least one thing they had learned."*.

The only negative feedback that appeared was that some attendees did not seem to be aware of what they should expect from the sessions. This is mostly likely due to a small oversight in communication when promoting the activities and managing expectations. Overall, however, all the activities that were evaluated recorded improvements among the attendees specifically due to the activities.

Teacher Activities

86 activities were offered specifically for teachers this year (two activities had a fee), double that which was run last year. 44 of these activities were being run for the first time, whilst 42 were established activities. Events run included:

- Masterclasses
- Lab teaching (including for technicians)
- Hosting teacher networks
- General teacher support
- Training (including on the curriculum and careers)

Regarding the primary aims of these events, we saw the following breakdown from those that were recorded:

Enhancing subject knowledge	42
Boosting confidence as a teacher	27
How much they act as a leader in teaching	6
If they are seen as leaders in teaching	3
On the usefulness of physics	1

1,042 teachers from 492 schools and colleges attended the sessions. 12% of the activities were not 100 per cent attended by teachers from state schools. 28% of the activities had a mix of physics specialist and non-specialist attendees; the remaining 72% were 100 per cent attended by non-physics specialists. Where it was recorded, 100% of the attendees registered improvements against the primary aim of the activity.

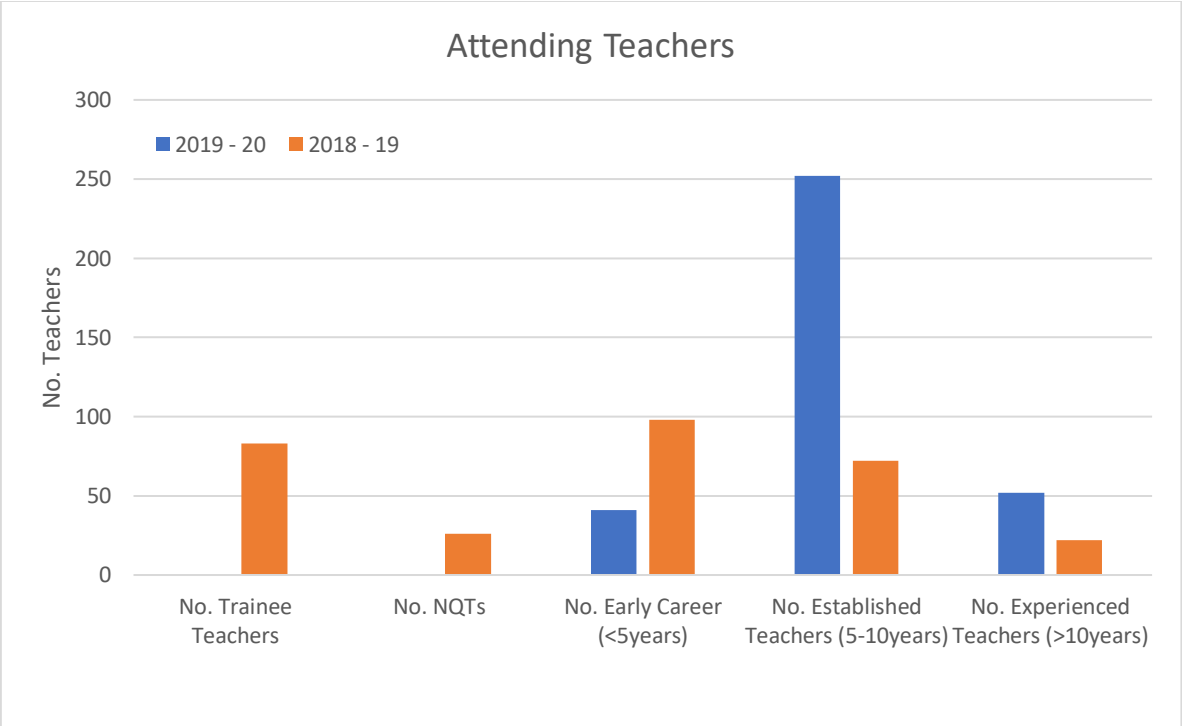

Chart 5: Breakdown of attendee teaching experience

Chart 5 shows the experience levels of the teachers attending compared with last year. We had no NQTs or trainee teachers this year, and a higher proportion of more established and experienced teachers.

There was an overall increase in numbers across all the teaching levels of the attendees attending; this year we also saw Officers extend their support to Early Years teachers and Technicians (Chart 6). The majority of activities were focussed on enhancing the subject and curriculum knowledge of the teachers, as well as boosting their confidence as teachers, and this was across all levels.

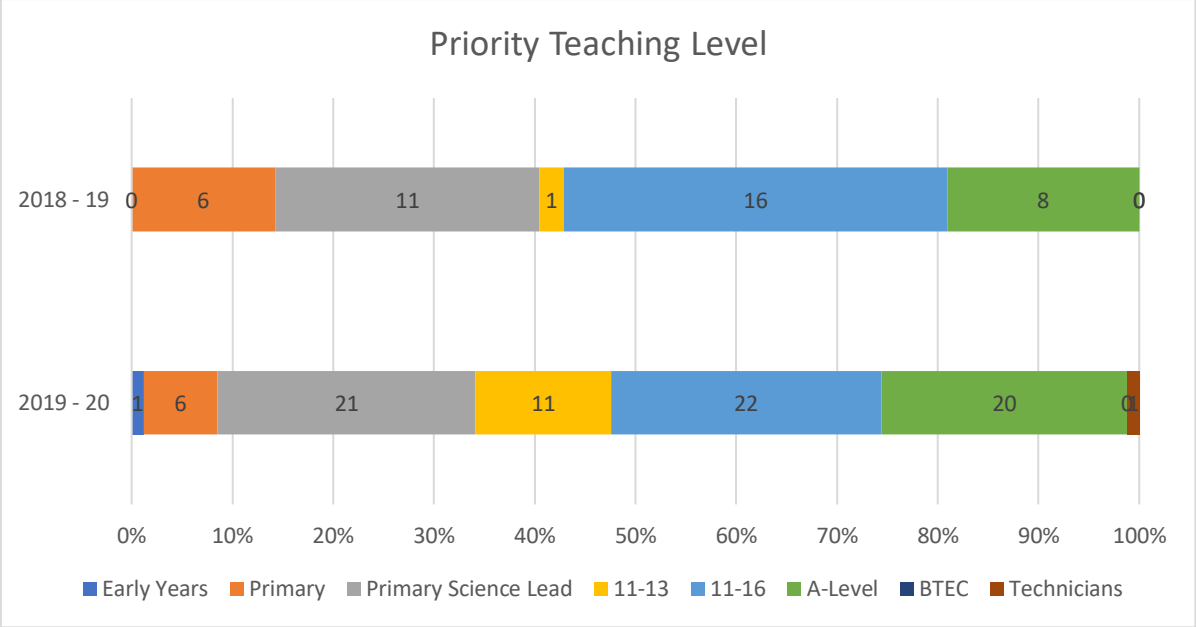

Chart 6: Teaching levels of attendees by percentage of overall activities

From activities where Officers carried out some form of evaluation, we were able to gauge that teachers liked both the activities and the resources, and enjoyed learning new information, along with the support offered. In addition, they valued having access to university labs.

However, it seemed that, though the teachers valued having the support and the training, they were still unsure as to how they could implement what they learnt at the sessions into their day-to-day teaching lives.

University students

OOOs ran 118 events (42 first time and 74 established activities) compared with the 77 activities run last year, targeting 2,290 undergraduate and postgraduate students (an increase of 655 students from last year), as well as two academics at one university. All these sessions were free except for one talk that took place in a public event space, with the majority of attendees recording an improvement after all activities. Positives from the gathered feedback included describing it as a great activity to help get to know the department and meet peers, and a great opportunity to engage in outreach.

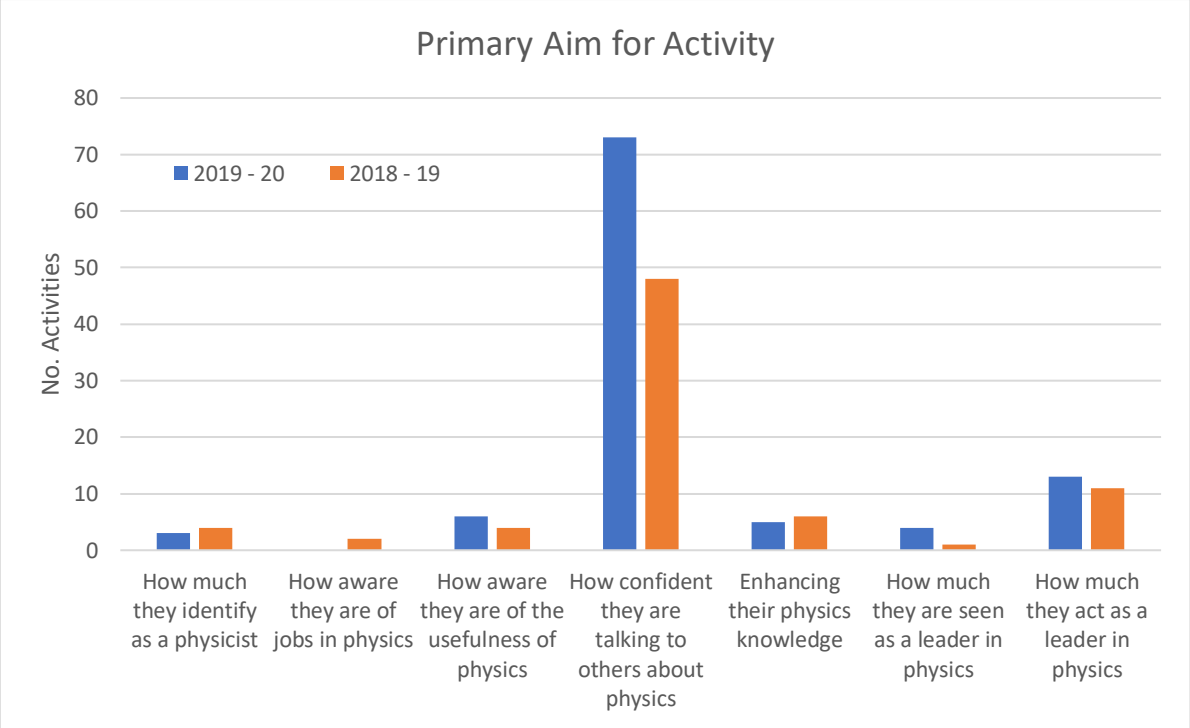

Chart 7: Primary aim for activity

The primary focus of these activities is improving their confidence in talking to others about physics, as shown in Chart 7. All these activities were primarily training and knowledge enhancement sessions for student mentors/ambassadors to boost their confidence in talking about a particular physics topic whilst doing outreach (shown as 'Subject Knowledge' in Chart 8). In addition to some general skills training sessions, some Officers ran sessions promoting outreach opportunities to their departments. In the near future, we anticipate an increase in the support Officers will be providing to their undergraduate students to help them transition from school to university.

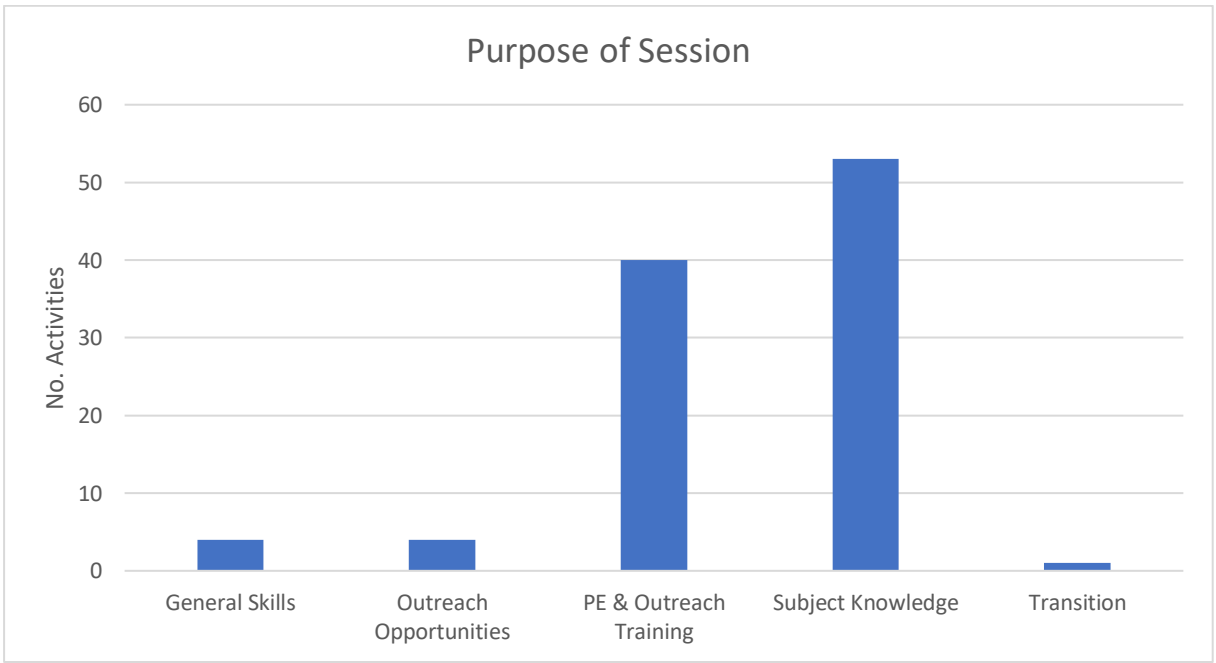

Chart 8: Purpose of sessions

As shown in Chart 9, there was a significant increase this year in activities put on for general undergraduate and research students. This will hopefully lead to an increase in the numbers of students interested in participating in outreach overall.

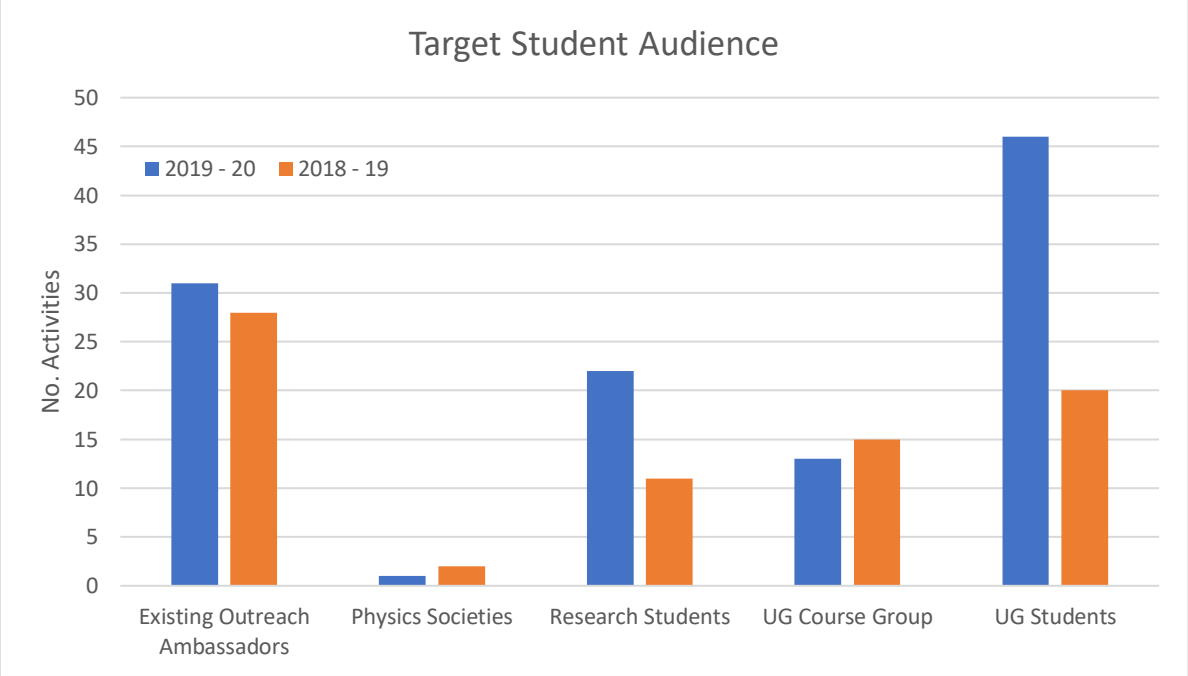

Chart 9: Targeted audience breakdown

Outreach across the departments and strands

Following on from feedback from the Officers that last year's reporting options were somewhat restrictive in nature and not fully reflective of the nature of their activities, nor of their locations, these reporting features were left open-ended with some suggestions. From what was then reported back, we have been able to update the bands to reflect this year's activities and these, along with even further considerations due to the changed manner of working brought about by the COVID19 pandemic, will now be the bands going forward. In addition, we have been able to more accurately report on the nature of the work involving university students, and so have included that information here.

Typically, as for last year, the majority of activities were workshops and talks (Chart 10).

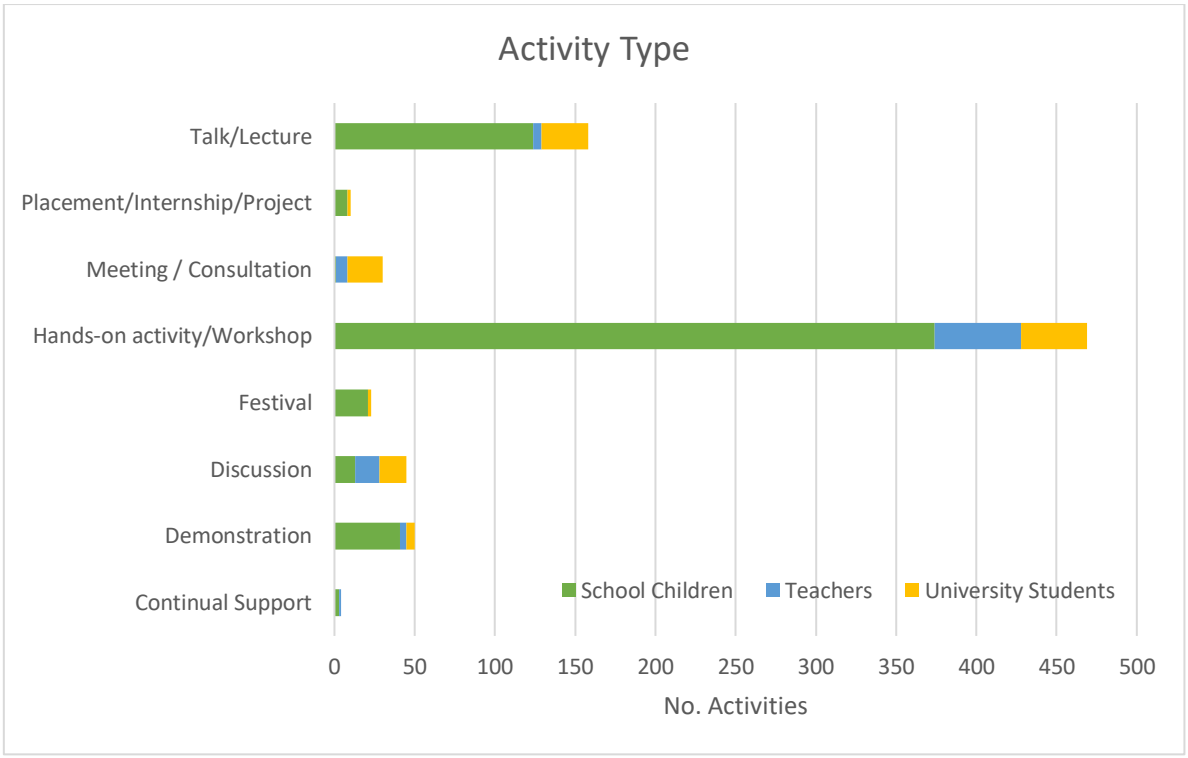

Chart 10: Event type

Most of these activities were held at local schools or on campus, as shown in Chart 11, though, after COVID19, most activities then moved online.

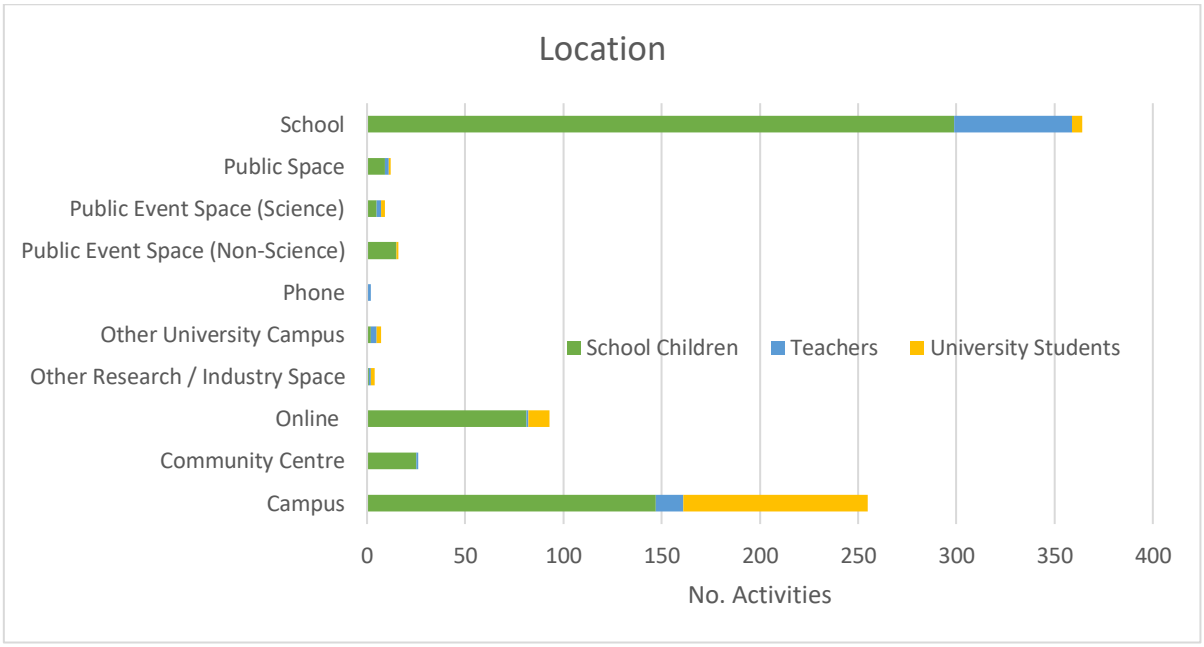

Chart 11: Event locations

Chart 12 shows that we are still seeing that the majority of activities that are reported on are overwhelmingly led by the OOOs, but department academics and students made a significant contribution too. It is great to see this participation across departments, but the level of involvement varies significantly by university.

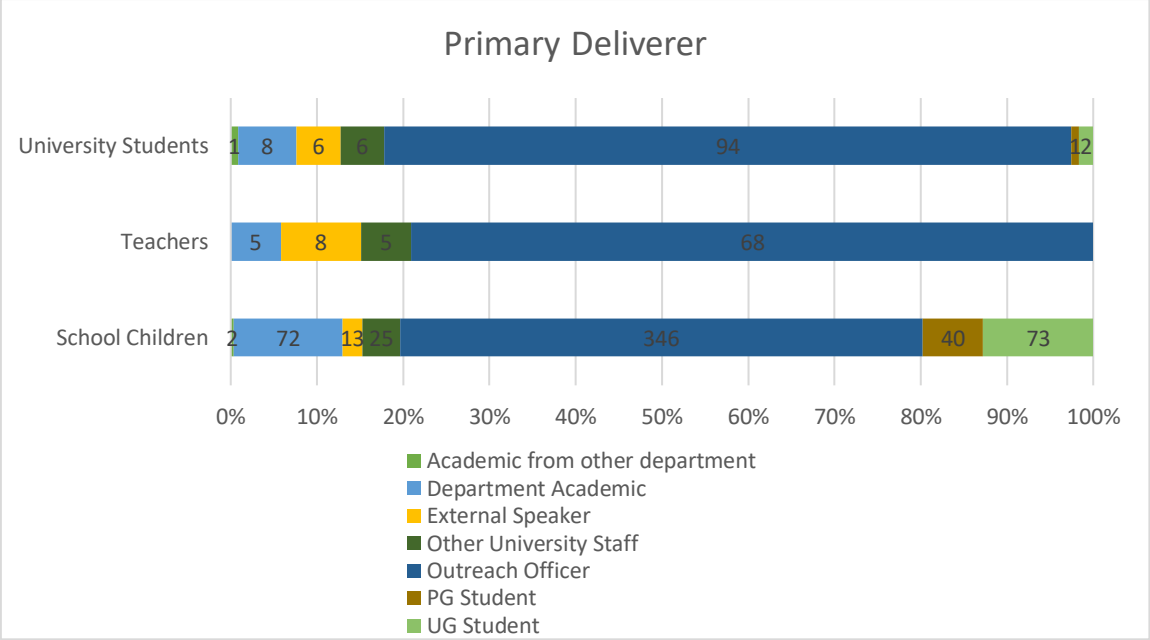

Chart 12: Proportion of events that different types of people have led

We also appreciate that a lot of outreach does indeed go on across all departments, but the Officers are not necessarily made aware of this and are thus unable to report on what other people are doing. Seeing an increase in activities primarily delivered by other people would not necessarily represent a decrease in workload of the Officers but could also indicate that the Outreach Officer role is more embedded within in the department and, as such, people are willing and able to report to the Officer on their activities, which would also be a significant positive.

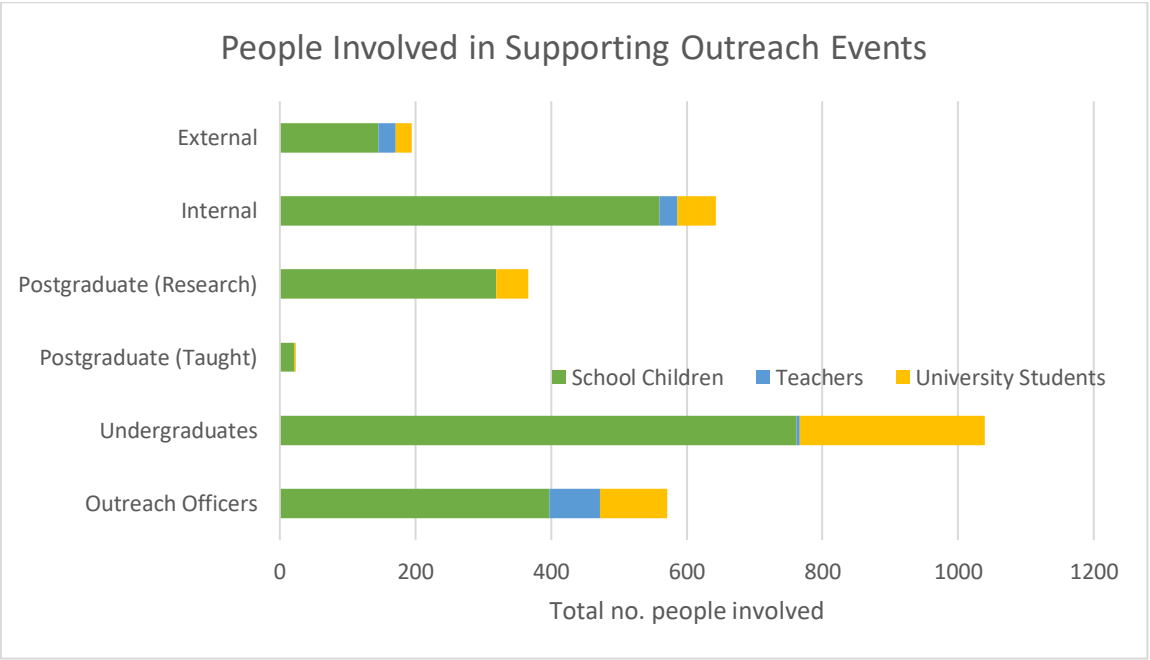

Chart 13: Overall numbers of different types of people involved

We are hoping to continue to see a steady increase in the overall departmental contribution to delivery in the future, with more engagement across all levels of all departments. As such, from this year, we are now trying to capture the data on everyone involved with each of the

events, as demonstrated in Chart 13. This is very pleasing as we can see that, whilst much of the delivery may still be being done by the Officers, there is significant involvement in outreach across the departments, with a particularly good number of students and internal staff taking part, and specifically for events for school children.

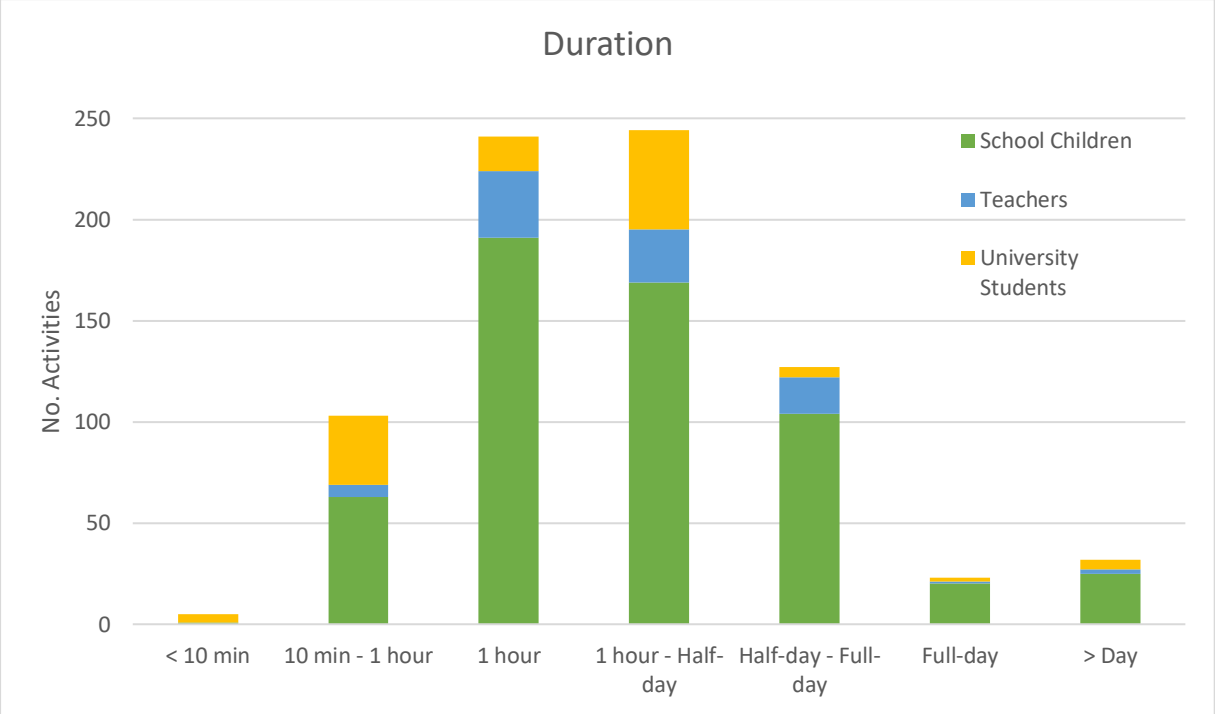

Chart 14: Length of activity

As for last year, we asked Officers to record the lengths of their activities (Chart 14), in addition to how much time they spent directly engaging with attendees (Chart 15). This is because, for example, whilst a festival event may last a whole day, it is likely that an attendee may only engage with the hosting staff for a matter of minutes.

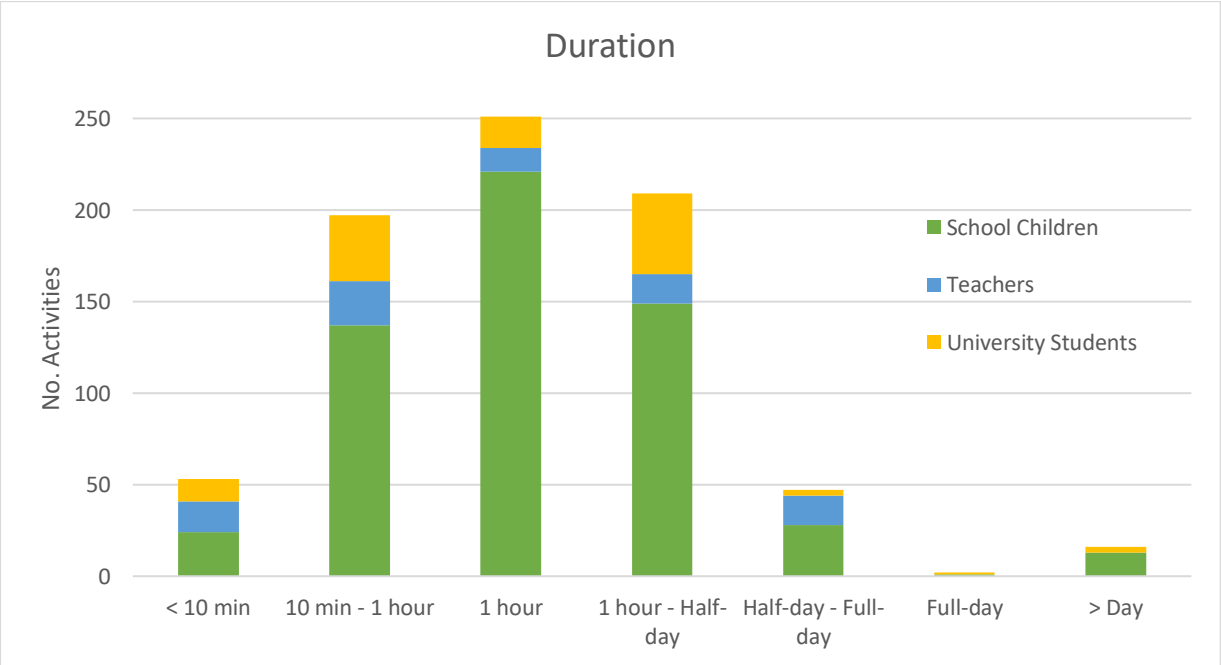

Chart 15: Length of engagement

Involvement in other Ogden programmes

Only three OOOs (and one ex-OOO) were able to run a School Physicist of the Year event this year, due to the COVID19 pandemic. All four SPOTY events were run online and Officers have the option of running a SPOTY for last year's Year 10 cohort up until January 2021, should they wish to and be able to. In addition, the awareness of and support for other Ogden programmes varies, with some OOOs promoting Teach Physics, supporting local School Partnerships and hosting Alumni internships.

Note, the scholarship and alumni programmes have now closed and so the number of alumni internships will decrease over the next three years, but funding will continue to be available for each Officer to host one outreach intern over the summer, for up to 6 weeks. Two different OOOs hosted an intern on a summer outreach internship this year, and an additional 12 alumni were hosted by 6 different universities on research placements.

Teach Physics and Mentoring with Brightside

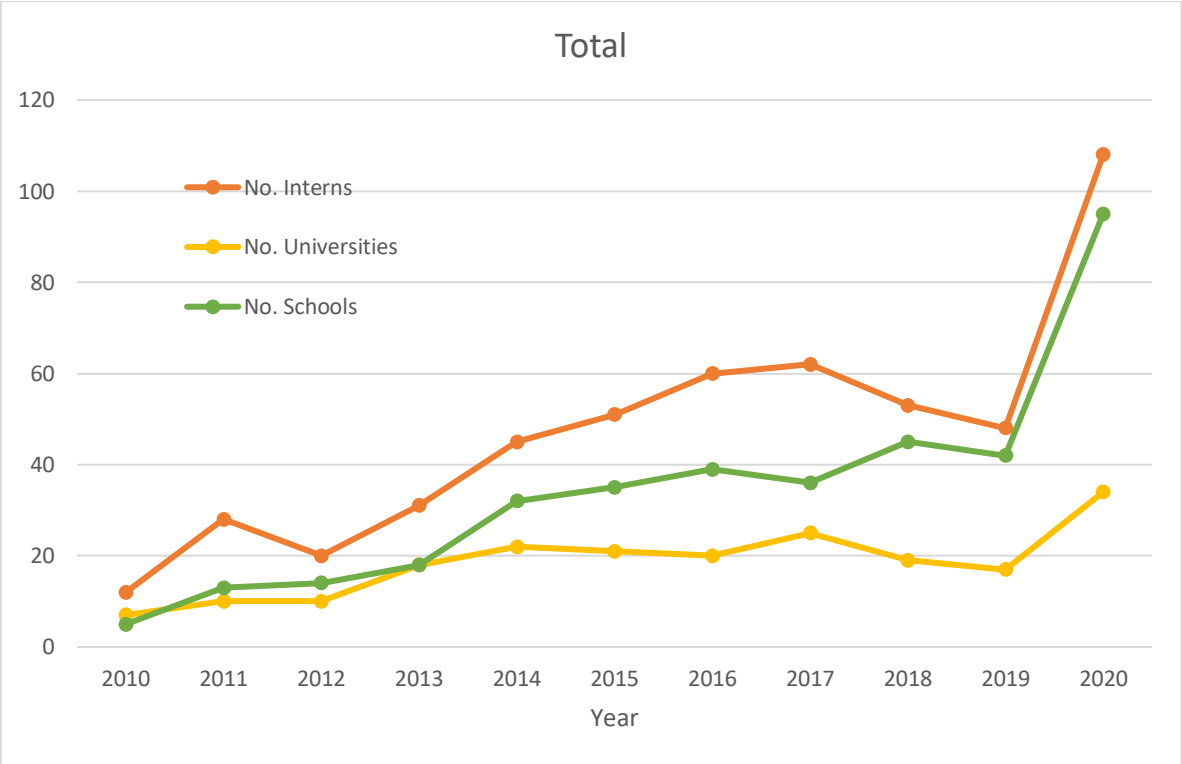

Chart 16: Teach Physics totals by year

An increase in promotion of the Teach Physics internships this year significantly boosted the number of students applying for that opportunity (see Chart 16), though we unfortunately had to cancel this year's programme. This year the scheme was not only promoted by Officers, but also by their Heads of Departments and through their university careers services, which is why we saw such an increase in numbers hearing about the scheme, as well as an increase in the number of universities from where the interns came from (shown in Chart 17). These internships place undergraduate physics students in a school for 4-5 weeks during university holidays, supported by a bursary from the Trust.

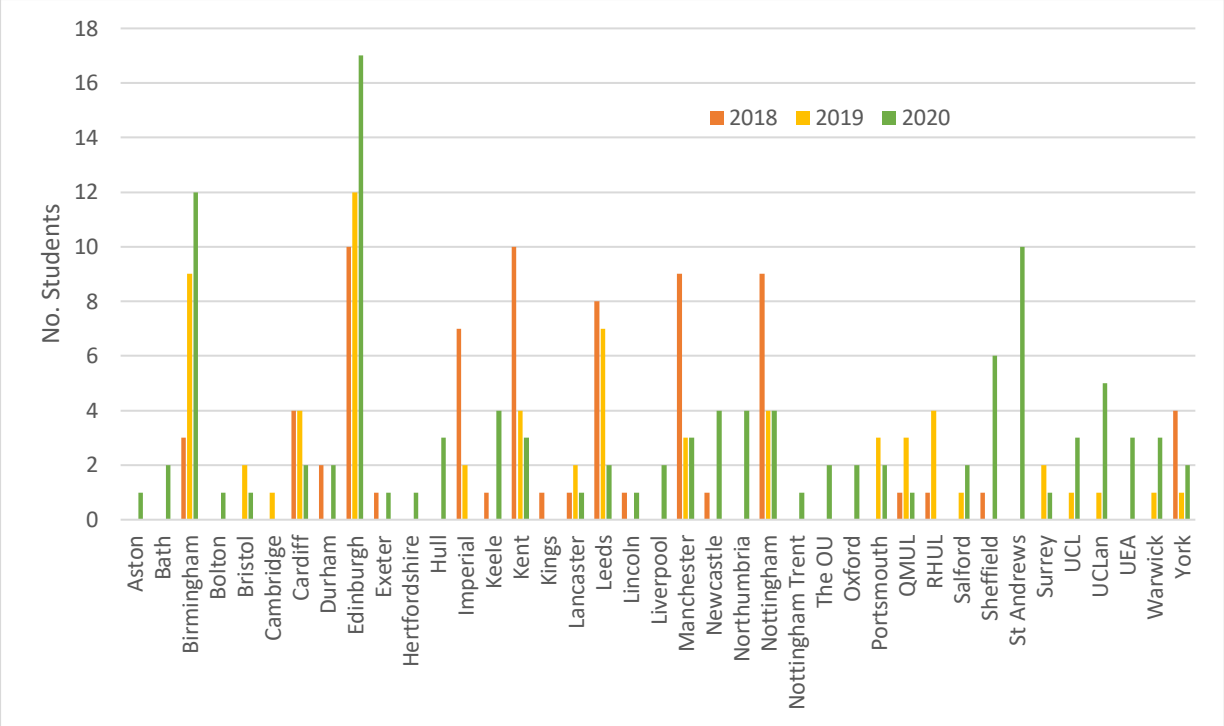

Chart 17: Breakdown of Teach Physics applicants by university

Of the 114 students who submitted their applications, 22 came from State-Funded Selective, 23 Independent, with the majority (69) from State-Funded Non-Selective schools, as shown in Chart 18. We were also able to see the breakdown of which years the students were in, having opened applications formally for all year groups (previously first years were not able to apply), and this is shown in Chart 19.

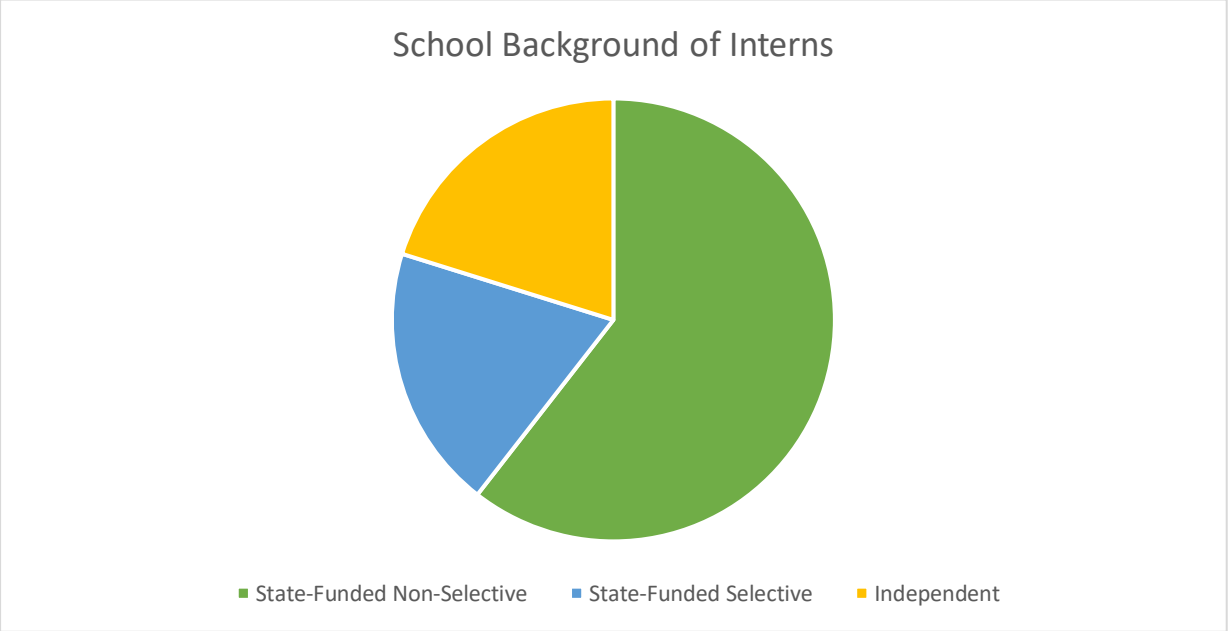

Chart 18: Breakdown of Teach Physics applicants by school background

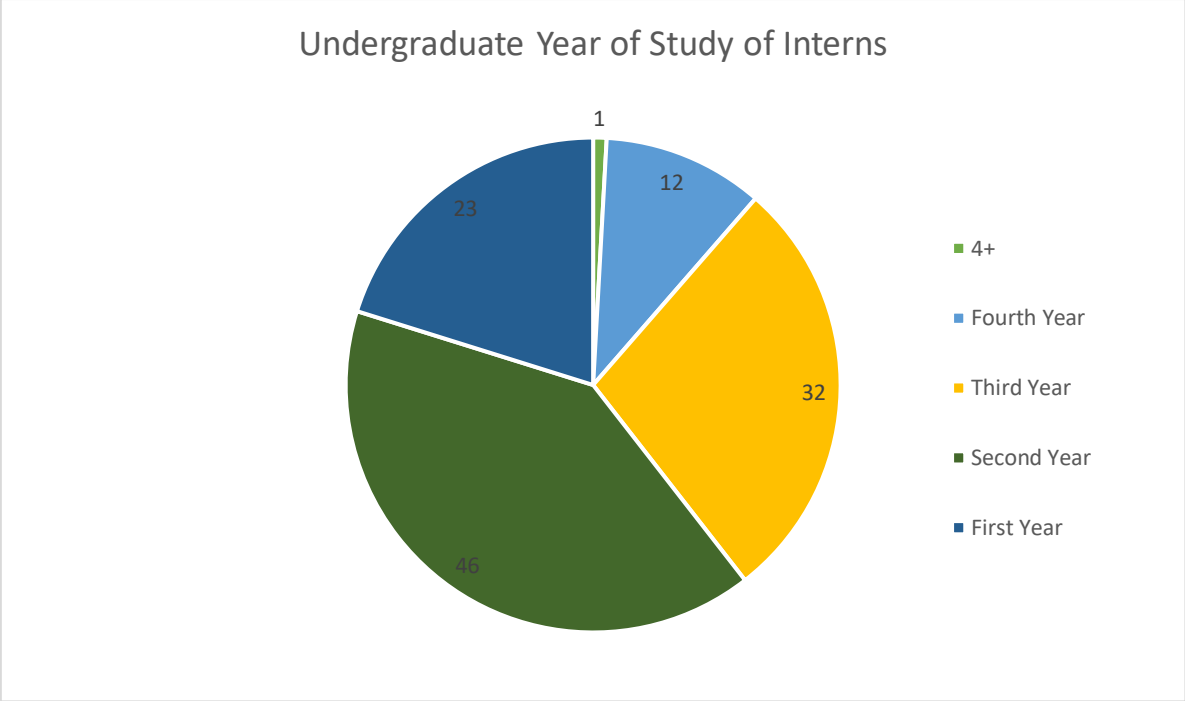

Chart 19: Breakdown of Teach Physics applicants by undergraduate year

To make use of the enthusiasm of undergraduates to support younger pupils, and to fill a gap where support was lacking for Year 13 students due to the abrupt cessation of their academic year and the uncertainty surrounding university admissions, a Year 13 mentoring programme was implemented, run centrally from the Trust but with the significant input and support of 7 Outreach Officers (Kent, Leeds, Liverpool, Newcastle, Northumbria, The OU and UCL).

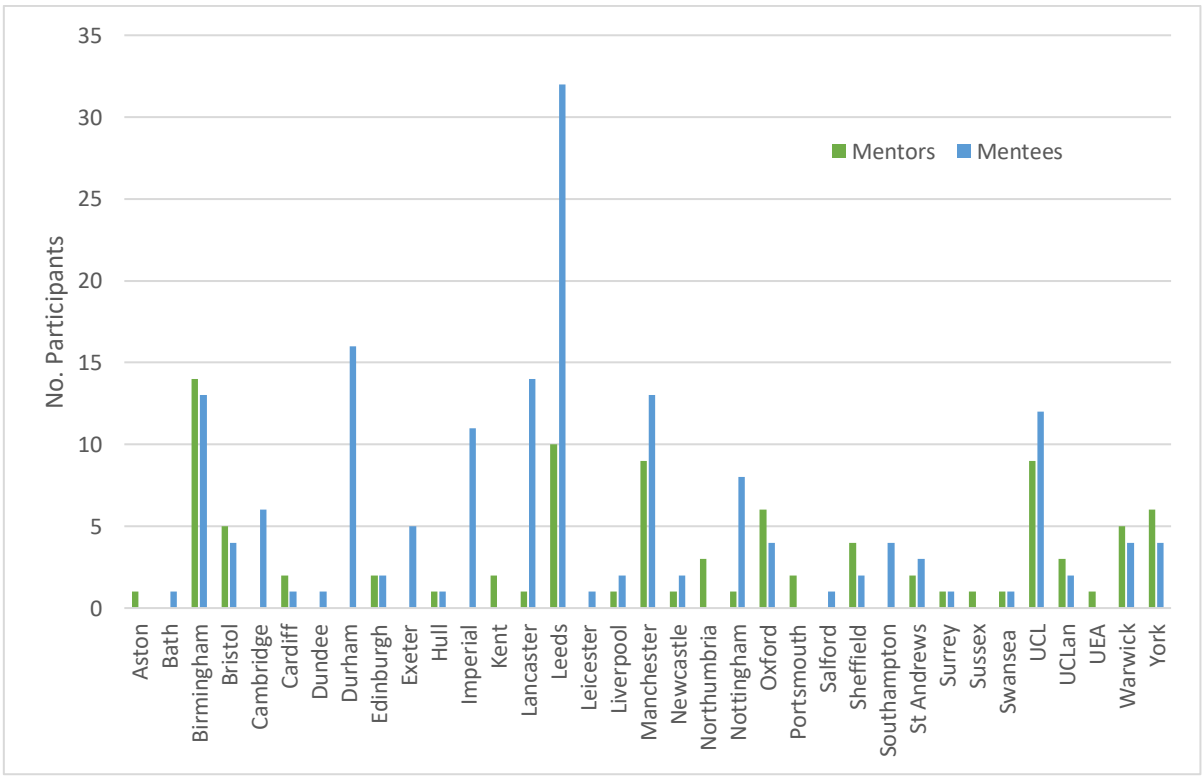

Chart 20: Numbers of mentees with their first choice of university and university mentors

A total of 95 mentors from 26 different universities (Chart 20) helped 174 mentees through a structured 10-week programme designed to prepare incoming freshers for university life, not only for physics-related study but also general situations related to a healthy work-life balance. Priority was given to students who would be the first in their family to enter university (Chart 21). Each week was themed around an important element of studying physics and studying at university. The resources were made freely available to all students, though the mentoring element was restricted due to mentor availability. More information on this, including in-depth evaluation, will be provided in a future document.

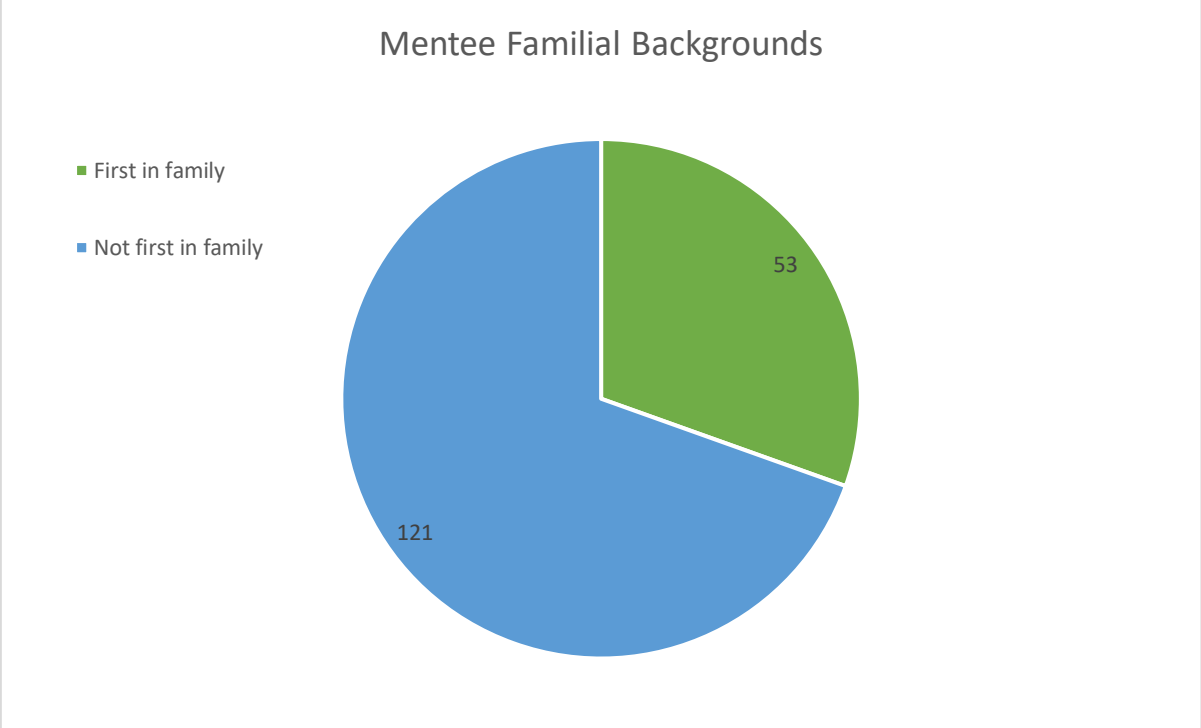

Chart 21: Numbers of mentees with their first choice of university and university mentors

Working groups and online partnerships

The success of the mentoring programme was in huge part due to the collaboration of a number of Officers from across the network. As soon as it was indicated the country would be going into lockdown around March, it was anticipated that the majority of outreach events would be cancelled or be forced to move online. As such, we decided to set up working groups to address key concerns and questions of Officers. Initially, each working group met almost every week, though the frequency decreased over the summer period as Officers began to do more outreach events online and as universities began to settle.

The working groups addressed departmental strategy, evaluation, public engagement opportunities for undergraduates, science communication modules, online summer schools and the Y13 mentoring programme. They were successful in enabling the sharing of best practice and useful resources, and each working group was able to put together some form of ‘Top Tips’ document.

We also had monthly meetings which were an opportunity for all the Officers to discuss university and personal updates, with the intention of reducing the feeling of working in isolation as well as allowing everyone to discuss potential collaborations. We were pleased that several formerly funded Officers were also able to join several of these sessions, and

hope to continue these long-term, even once people are back on campus and outreach activities take off.

Whilst we have now wrapped the online working groups, we will continue to have regular monthly meetings where Officers will lead on training sessions and discussions, continuing to build upon our successful partnerships.

A notable example of a successful online partnership was the collaboration between the universities of Leeds, Sheffield and York, where they worked together to run an online work experience week. We hope that this will inspire other universities to run joint events, making use of the opportunities brought about by online technology.

Evaluation

A few Officers who had not used the evaluation toolkit had not had time (due to starting the role fairly recently) but felt it was clear and would be useful or had only had time to focus on practicalities of their activities, due to their roles being so new within their departments. A few others had other existing methodologies they used to carry out evaluation so did not need to use the one provided by the Trust.

The majority of Officers have, however, made use of the evaluation toolkit provided by the Trust. Everyone who has used it found it fairly useful, drawing on it as a 'recipe book' and enjoying the variety of methodologies that are included all in one place. Using it helped Officers to focus on what impact they wished to have with their activities and helped them with their planning as well as with their evaluation.

"I like the toolkit a lot! It's very practical, very applied, and I have shared it to many students and colleagues who all find it very useful."

However, several key concerns have been raised and we will look to address them quickly and carefully where possible. These include lacking elements on how to develop a logic model and/or theory of change and addressing the ethics of asking personal information such as gender and ethnicity. Detailed examples of the different types of evaluation which can be carried out, with the positives and negatives of each, as well as more thought on longitudinal evaluation (particularly as repeat interventions is a key strand from Ogden), could help make the resource more useful.

A more reflective approach to using the toolkit was also raised by several Officers, with the understanding that activities will not necessarily change (nor perhaps should) the science capital of attendees, but that an understanding of science capital as a whole should be used to inform the development of activities and their learning outcomes.

In addition, some Officers felt that, despite their experience, the toolkit as a whole could still be fairly daunting, and found bouncing ideas of other Officers in tandem with the toolkit was the most effective way to use it.

Departmental strategy and leadership

It is pleasing to note that, universities generally have a positive attitude towards outreach and public engagement, though having something more formally embedded and structured would make individual efforts more coherent.

We have found that outreach tends to be more embedded in departments which have academic leads dedicated to supporting and growing the outreach in their department. There are a number of departments which have an academic director for outreach. Other successful support formats include an outreach committee or team including a number of academics and other members of the department. We are working towards a leadership programme to help universities achieve this in their own departments.

Out of the universities which reported, five now have some form of an outreach strategy firmly embedded in their department, whilst a further two have a strategy they are in the process of embedding. Two more departments have written a strategy which has received approval and sign off at a senior level and they are now in the process of working under it, whilst a further three are hoping to review and improve their previous strategies. The Trust can provide bespoke support for creating and reviewing department strategies, and encourages Officers to share ideas and resources with each other too.

It is a pleasure to report that four of our currently funded OOOs are in permanent roles, which will therefore continue after the end of Ogden funding, and another Officer who has just come off Ogden funding is in a permanent position in their department.

We are happy to support the departments with the necessary data to make strong business cases for the Outreach Officers and encourage Officers to promote their own work in productive capacities.

Celebrating outreach

Whilst most departments regularly speak highly of the value of outreach, Officers often feel that they and their work is not necessarily recognised or appreciated. However, this seems to be improving and many Officers are finding varying opportunities to talk about and share their work.

Several Officers are regularly invited to departmental meetings to speak about their outreach work, advertise opportunities and offer support, with some having regular, scheduled slots. One Officer had sessions as part of their departmental seminar series, and another ran consultation meetings which were well-attended.

Several Officers have joined various committees where they are able to share their work and experience. One Officer creates short videos and posters which go up around their campus, promoting their outreach work.

Many Officers are able to report in departmental newsletters / emails / websites / other online platforms on successful outreach grants and activities, as well as working with their press office to promote particular events. Some Officers have Heads of Department also including outreach events as part of their regular departmental updates.

A few Officers have been able to apply for awards recognising their outreach projects, both internally and externally, and we would like to see this grow.

Conclusions

OOOs have great coverage and reach in the UK, running activities that reach many schools and pupils. These activities give pupils and teachers greater insight into physics, an understanding of what university life is like, and an idea of what you can do with physics, hopefully inspiring more students to continue studying physics to A-level.

The bulk of students involved fall into the 7-14 age range that has been shown by the ASPIRES research to be a key age group to engage with. The number of longer events and repeat interventions has also been increasing, which are likely to leave a greater impression on the pupils.

Many OOOs are beginning to work with families through schools, rather than at general public events. This fits in well with research showing the importance of family to young people's decision making and this could be explored in more depth, looking at the different approaches to see what works.

Almost all OOOs support students and academics in their department to carry out activities, providing a valuable source of expertise for their whole department, as well as an opportunity for students to engage with schools and the public, improving their confidence and communication skills, in addition to potentially considering a career in public engagement or teaching. The improved numbers this year have directly demonstrated the departments' commitment to suitably satisfying the Trust's targets.

One of the greatest improvements this year has been the twofold increase in the number of activities aimed specifically for teachers. Given the number of non-specialist teachers, this is an area of work that the Trust recognised as an area to grow to provide subject-specialist expertise for teachers in their local areas, so the numbers achieved this year have been very pleasing.

Finally, the fact that the number of outreach engagements overall were comparably high, despite the enforced cancellations of so many events, points to the value and flexibility offered by the Officers and of outreach, and the important role they play in engaging with their communities.

The Trust continues to look to support departments to achieve their goals in outreach. Having carried out a short piece of research this year to get a better understanding of how outreach fits in with the roles of the Head of Department and academic leads, we will now be putting together a programme of support for the departments, covering their main concerns.

We will continue to focus on supporting the evaluation of the officers' activities to get a better understanding of what works, and the sharing of best practice. In addition, we will look to work closely with those departments entering their final year of funding, to encourage them to think longer term and, hopefully, recognising the importance of the Outreach Officer, ensure their permanence.

Appendix 1 – OOOs active in 2019-20

Institution	OOO
University of Bath	Emma Osborne
Cardiff University	Grace Mullally
University of Edinburgh	Jean-Christophe Dennis
University of Hertfordshire	Nuala O'Flynn
Keele University	Scott Walker
University of Kent	Hannah Tonry
University of Leeds	Erin McNeill
University of Liverpool	Sarah Annand
Newcastle University	Paul Branch
Northumbria University	Antonio Portas
University of Nottingham	Chris Staddon (departed role July 2020)
Open University	Alice Dunford
University of Portsmouth	Jen Gupta (funding finished September 2020)
Queen Mary, University of London	Martin Archer (departed role September 2020)
Royal Holloway, University of London	Claudia Antolini
University of Sheffield	Laura Meade
University of Surrey	Heather Campbell
University College London	Mark Fuller
University of Central Lancashire	Aimilia Smyrli
University of St. Andrews	Simon Reynolds