

FINAL REPORT - UNIVERSITY OF SOUTHAMPTON

SUPI project name: *Talk to US!*

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1: THE 'STORY' OF YOUR SUPI PROJECT

a) Please provide a narrative summary that describes the journey your SUPI project has taken from beginning to end and covering all the key developments in between.

Talk to US! is a conversation. From both the logo and the name of the University of Southampton (i.e. 'US') SUPI to the philosophies and motivations that drive us, dialogue is at the heart of what we do.

It all began with two Southampton/Hampshire Teaching Alliances (Bitterne Park School, and Hounslow and Wildern Schools), six sub-projects, and an enthusiastic group of school and university staff. The *Biological Sciences* and *Chemistry* research staff had been engaging with schools for many years and in many ways and were looking to expand their offer and explore activity formats; *Discover Oceanography*, *Dragonfly Day* and *LifeLab* had established activities and, in the case of the latter two, dedicated staff, and wanted to reach out to wider groups of pupils; and the staff at the Biomedical Imaging Unit (BIU) wanted to pool their engagement experience and expertise and work with teachers to create a brand new activity.

The University of Southampton has had a long history of working with local schools, from ad-hoc, one-off talks and events organised between personal contacts to long-term, established programmes, but, in most cases, the activity relationship has been one-way, with the university delivering activities to schools. The teachers from the Teaching Alliance schools were very keen to take key roles in the development process, and to work in closer partnership with the university to improve the experience and impact for all involved, particularly the pupils, in a more balanced two-way process, in-line with the project philosophy and objectives.

Just as the sub-project activities came to the SUPI at various points on a spectrum of development, so they continued to grow and evolve in different ways. Some projects faced difficulties in maintaining communication between the schools and the university and lost some momentum, others carried on steadily, and one in particular raced through, evolving rapidly from an idea to a fully-fledged activity day.

The BIU responded to requests from teachers for support in delivering Forensic material, new to the syllabus, in an engaging way by creating *Murder in the Medical School*. Not only was this a fantastic example of what can be achieved when the university and school staff work truly collaboratively from the beginning; but also of the advantage of using an iterative evaluation, assessment and feedback structure which, through questionnaires, interviews and meetings with pupils, teachers and researchers, allowed the project to respond directly to the demands and observations of all those involved.

As well as communication, motivation and shared goals were important factors in how projects developed. Again, a spectrum of involvement and investment by all parties was seen depending on other demands on their time. It became clear that the role of facilitator was key in maintaining these relationships in all their forms by, for example: keeping momentum going; putting a positive outlook on things not going to plan; managing expectations with a global perspective; sharing learning between projects from overcoming challenges; and, most importantly, getting the right people in contact with each other by carefully and considerately matching goals and objectives.

As the sub-projects developed, so did the networks of people around them. The number of schools engaged with the project grew and *Talk to US!* was increasingly able to connect with schools that had been deemed 'hard to reach', either physically because of their location or because of a limited or non-existent history of engagement with the university and lack of or difficulty in making contact. It became apparent that the key to working with schools was finding an interested and motivated teacher with support from their senior leadership team (SLT); and, with word of the project spreading between teacher networks, this became increasingly possible. Likewise, within the university, news of the project began to spread and the project manager and PI made connections with existing engagement networks resulting in increased recognition and support for university staff involved. This took both strategic and on-the-ground forms from the PI taking the position of Chair of the university's senior-staff-driven Engaged University Steering Group (EUSG) to the project manager becoming involved in the less formal Public Engagement staff Network (PEN). In both the schools and the university, the most motivated staff were standing out and had become the main points of contact in their institutions, which made communication much more effective.

Through constant self-reflection and absorption of learning points, plus a desire to both share the accumulated knowledge and experience as well as ensure a sustainable project legacy, *Talk to US!*, while continuing to support and celebrate the six sub-projects, looked inward to strategic institutional changes and creating resources. Throughout the project, a key strength had been sharing resources and expertise, from activity ideas to training such as *LifeLab's* 'Meet the Scientist' school pupil engagement training for university staff. New resources were also developed such as the *Discover Oceanography* online teachers' toolkit (in development, due for launch September 2017) and the 'School-University Partnership Building Guide Book' (*Guide Book*). The *Guide Book* also went through an iterative development process and was finally printed and launched at the final Celebration Event in the 4th year of the project. Over 600 hard copies have since been distributed all over the UK, the electronic (pdf) version shared internationally and there have been positive reviews from school and university staff alike, including being cited in a paper submitted for publication. An online version was created (link [here](#)) which the central Outreach team have taken ownership of, ensuring its continued development and monitoring after the end of the project. In fact, a whole portfolio of online teachers' toolkits are now in development as a result of the *Talk to US!* project, each with built in analytics gathering usage data.

The 4th and last year of the project concentrated on consolidating relationships, both internal e.g. between the Southampton Education School (SEdS) who hosted *Talk to US!*, the central Outreach team and the newly formalised Public Engagement with Research unit (PERu), and between researchers and teachers. The sub-projects were encouraged to think about 'life after SUP!' and what they would need to be able to keep going post-project end. The Celebration Event brought together a diverse range of people, from school and university staff and pupils, including schools from all over the country and multiple universities, to local arts and culture venues. The new connections made here and the affirmation of existing connections formed a valuable part of the SUP! legacy.

Making, managing and maintaining these connections between school and university staff was part of *Talk to US!*'s approach to encourage early career researchers (ECRs) to engage with schools and, consequently, identify and develop transferrable skills such as effective questioning and clear communication. *Talk to US!* worked with a local teacher (who had approached us independently about engagement opportunities) to develop the concept of training for researchers engaging and working in partnership with schools more generally, to complement *LifeLab*'s 'Meet the Scientist', using the learning from the *Guide Book* as well as the expertise of *LifeLab*, the SEdS ITE (Initial Teacher Education) staff and the teacher. This was met with a positive and enthusiastic response and is continuing with support from the SEdS, central Outreach and PERu teams, with a pilot session due to run in October 2017.

Also in the final year of *Talk to US!*, a personal highlight for the current project manager was the involvement of the project in the international engagement conferences LK7 and Engage 2016. LK7 was attended by both the *Talk to US!* project manager and one of the key teachers whose contributions have included being instrumental in the development of the *Murder in the Medical School* sub-project and creating the *Discover Oceanography* online teachers' toolkit; Engage 2016 was attended by the project manager and the PERu team. In both instances, it was hugely valuable to see the work of the project in a global context, to be exposed to the incredible engagement work taking place worldwide from which so much was learnt and to be able to make a contribution by co-presenting workshops at both of these with SUPI colleagues.

Furthermore, *Talk to US!* brought the project to a close by initiating a conversation about the university offering formal support and recognition for teachers that work with the university, which is continuing; and by supporting the creation of two new sub-projects which would, again, out last the SUPI project and ensure its learning was passed on. *ACoRNS* is a network for sharing research and up to date knowledge on best practice for educators working with autism which includes researchers, educators, service users and their families. The *Gene Tech Hub* sub-project created three regional hubs which offer a combination of taught practical sessions on gene technology equipment to follow the A-level syllabus and interactive sessions with current Life Sciences researchers in which pupils are free to engage in dialogue and discussion.

Finally, as a result of the output and influence of the *Talk to US!* project, the university has seen fit to invest in the work of embedding the learning of the project and in creating university infrastructure to improve its existing and potential partnerships with schools by creating a role to support this, the School-University Partnership Officer (SUPO). The role, which will be active from 1/1/17 to 28/02/18, is a continuation of the *Talk to US!* project manager role and is staffed by the current *Talk to US!* project manager (with cover arranged for July-September 2017). It is supported by SEdS, Outreach and PERu who have all invested in the role. Highlights to date include: continuing support of the eight *Talk to US!* sub-projects; offering guidance and advice to university staff wishing to engage with schools; acting as a point of contact for schools; beginning to map all school engagement activity across the university; running the brand new Teacher Zone and Teacher Trail initiatives at the university's Science & Engineering Day; and being accepted to co-present workshops at the C2UExpo, Solent Teaching and Learning Community Conference (SLTCC) and HEA conferences with colleagues from other university departments, Southampton Solent University and local community group the Touch Storytelling Network. The legacy of SUPI is continuing in Southampton!

2: KEY FINDINGS, LEARNING POINTS AND ENGAGEMENT ACTIVITIES

a) Please list the key findings from your SUPI project

A project such as SUPI generates a huge amount of learning which can be shared and made accessible in many ways. In the case of *Talk to US!* this knowledge and expertise was condensed into the *Guide Book* which offered

not only practical advice and information but a template to help plan a project, case studies to make the learning more easily relatable, and inspiring photos and quotes from those involved in the project to remind the reader of why they are embarking on it and what can be achieved. This has proved very popular with very positive feedback from school and university staff alike, over 600 copies distributed and the electronic version (pdf) shared internationally. The online version, built by a UoS graduate who also went on to develop other online resources such as the Education in the Green Space online teachers' toolkit (available [here](#)) and the Discover Neuroscience online teachers' toolkit and EPQ support which is under continuing development, has also been launched and is available from the following link: www.efolio.soton.ac.uk/blog/talk2usguidebook

Face to face meetings outside of the activities are incredibly important, not only as an efficient way to move projects forward but also to inspire those involved and develop empathetic relationships between parties. For *Talk to US!* these took various forms, such as:

- Regular consultations and catch-ups for school and university staff (particularly sub-project leads) with the project manager,
- Meetings between school and university staff,
- Advisory group meetings,
- Celebration Events.

The various forms of meetings gave both 'local' and 'global' perspectives of the project and sub-projects, and served various purposes, from logistical arrangements to inspiring and motivating. Encouraging meetings both on 'home' and 'away' ground (i.e. at both schools and universities) further forged empathy and understanding between parties. Having open events such as the Celebration Events also allowed word of the project to spread and new connections to form as well as affirming existing ones by giving a platform for highlighting their achievements.

The 'hands-on' nature of the majority of the activities involved has been repeatedly cited as one of the key strengths. It has inspired pupils by giving a sense of achievement, by highlighting relevance, and by enabling engagement with a much wider variety of pupils, particularly those who do not respond so well to more passive or written activities. From focus group interviews with pupils involved with various stages of the project, the hands-on nature was identified as one of the main themes that arose from the pupils without provocation, both in that it was a surprise for them (it was 'eye-opening') and also that it made the experience far more enjoyable, engaging and inspiring (this is discussed further in Section 3). Another key strength is using activities that have a direct link to cutting edge research, in some cases with pupils carrying out activities or techniques that university staff and students use in their work. Again, in the results of the focus group interviews discussed in Section 3, this was identified independently by students from various schools and engaging in various sub-projects as being something that surprised them, most notably how 'modern' and 'expensive' the equipment both researchers and they themselves used was – which also created a more positive experience.

b) Please list the most important learning points from your SUPPI project

During an activity, it takes time for the researchers and pupils to build a 'rapport' and feel sufficiently comfortable with each other to effectively ask and answer questions and get the most out of the experience. Training such as 'Meet the Scientist' helps prepare the researchers, and pre-activity day in-school visits help ready the pupils. Sub-projects such as *LifeLab* are looking at preparing videos and perhaps podcasts to familiarise the pupils with the university environment as well as the concepts of the visit day in advance as it has been identified (anecdotally, in discussion with teachers) that some pupils choose not to come into an unknown environment such as the university or Southampton General Hospital (SGH).

However, the most effective form of allowing pupils and researchers to build said 'rapport' appeared to be by allowing for time and space for this to take place during the activity day itself. (Note that activity day', 'engagement day' or 'university day' refers to an on-campus visit day through any of our eight sub-projects.) In the *Biological Sciences* visit days, the researchers running the activities were also those who took part in the 'Meet the Scientist' style session 'Meet the Researcher', where pupils could ask them about their work and lives as a researcher. This led to them being much more comfortable asking for help with the activities and generally asking for more information related to what they were doing. Similarly, in *Murder in the Medical School* barriers are broken down between pupils and university staff before they even arrive as the staff play the suspects presenting their statements through videos shown at the school prior to the trip. By the time pupils have arrived at the BIU they have generally already formulated ideas about 'Whodunnit' and so lose no time in accusing them outright when they meet in person! By getting into the role, showing that scientists can be silly too, this then, again, makes the pupils much more comfortable talking to the university staff. In a less formal spin on 'Meet the Scientist', everyone has lunch together in a seminar room where further conversations continue which pupils often cite as a highlight of the visit and, again, allows the 'rapport' to grow.

As has been recognised nationally, in order to fully embed engagement best practice in the university and schools, a culture change is required. *Talk to US!* has shown that said culture change can happen, but it requires a many-pronged approach, thinking in the long- rather than the short-term and, above all, patience. No single idea, project or initiative alone, no matter how innovative, well thought-out or well presented, can be used to organise a large institution, such as a university, into having a new outlook on something - in this case engagement with schools. Rather, such a change must be effected in stages, with effective communication between all people in the institutions involved, and through a variety of approaches. Attendance of engagement conferences confirmed that this is not a 'local' phenomenon but something which is being observed in institutions worldwide and therefore something we can continue to work on collectively.

The role of facilitator has proved again and again of vital importance to the project. For existing partnerships, having an external party to manage expectations, shine a positive light on things when they do not go quite to plan, and help maintain the connections between partners can be invaluable, even aiding partnerships to continue where they might otherwise have come to an end. Furthermore, having a person whose time is dedicated to supporting partnerships means that they can remove many barriers, institutional, bureaucratic, logistical or other, that otherwise may hinder, slow, and possibly bringing to a halt, even the most enthusiastic of partnerships.

A facilitator also has an important role to play in creating an environment in which new partnerships can start and grow. Having a person with an overview of the landscape of people and opportunities within an institution, as well as an outward-facing approachability and visibility and connections to external institutions, allows them to match the right people to the right projects and, indeed, the right people to the right people, as was shown in the management of our partner teachers and researchers throughout the *Talk to US!* project. In fact, a 'triage' system is employed by the most successful institutions in engagement such as the University of Brighton. A facilitator can also organise scenarios which maximise the chances of such meetings and collaborations happening, from ideas sessions to open meetings, using their knowledge and experience to target potentially interested parties and create an inviting and inspiring atmosphere. An outside view also allows the facilitator to see potential partnerships and connections which might not be immediately visible to the parties themselves.

c) Please list all engagement activities that were developed and run during your SUP1 project

The eight sub-projects:

ACoRNS (Autism Community Research Network Southampton) – from little things, big things grow! This Educational research network, requested by local schools and involving teachers, pupils, parents and researchers (staff and students) from both Education and Psychology, started with support from *Talk to US!* in its final year.

Biological Sciences – a research group that was already engaging with schools but wanted to develop what they could offer; ran visit days and adopted the ‘Meet the Scientist’ format from *LifeLab*; now developing online teaching & EPQ support resources like those created with *Discover Oceanography*.

Chemistry – another engaged research group and an academic unit with dedicated Outreach staff; also ran some visit days but had communication trouble with schools; continued to share advice and experience with other sub-project leads and teachers; adopted and had printed and distributed the University of Exeter’s ‘Top Female Scientists Trump Cards’ introduced by a school connected via the SUPI project.

Discover Oceanography – an already established school visit activity at the University Waterfront Campus on the research vessel *Callista*, the *Discover Oceanography* team wanted to expand their reach and, thanks to *Talk to US!* support, were able to work with a wider range of schools; by working with a local teacher they have developed an online teachers’ toolkit which is being given continued support and is due to launch in September 2017; they have also received additional support from the Outreach team to work with more WP schools.

Dragonfly Day – a day of engineering workshops run by female researchers for Year 9 girls run by the university’s central Outreach team; with support from *Talk to US!* they have connected to more researchers, more of their activity leads have become STEM Ambassadors with the associated training and they have been able to develop and run a pilot version of the day aimed at Girl Guiding groups helping reach a wider range of pupils.

Gene Tech Hub – with *Talk to US!* support, three hubs, each supplied with the equipment and CPD to deliver A-Level gene technology workshops, have been created: one on campus in the Maths and Science Learning Centre (MSLC) and two at colleges in the South of England (in Salisbury and Wimborne) extending the reach of schools that can access the workshops; through *Talk to US!* the workshops are accompanied by sessions with talks and Q & A with current Life Sciences researchers in person and via video/skype.

LifeLab – purpose built laboratory facilities at SGH, pre- and post-visit lessons delivered by teachers after a CPD session, and an annual celebration event, *LifeLab* had been running before *Talk to US!* began with an official opening during the beginning of the SUPI project; already established, *LifeLab* has now worked with almost every secondary school in Southampton but with *Talk to US!* support was able to work with a wider range of schools and expand the reach of its ‘Meet the Scientist’ training.

Murder in the Medical School – started as a conversation between staff at the BIU and local teachers who wanted support with delivering Forensics material, the BIU team constructed an elaborate Murder Mystery that pupils solve through completing a range of scientific and analytical tasks; by working with several different teachers through *Talk to US!* and truly absorbing and morphing with the iterative feedback from all involved, the project has moved from being a good, engaging activity to an excellent, engaging endeavour; continued development beyond the SUPI project by particularly engaged school and university staff led to its expansion to include the *Hospital Heist* activity day which brings the research experience direct to schools for those that may not easily be able to leave school, and support of it’s development is continuing through Outreach & the SUPO.

A one-off CPD session for teachers and technicians run by the BIU on getting the most out of their microscopes.

Trial GCSE Science Practical sessions for SEEDS home education group.

'Meet the Scientist' training for researchers offered by *LifeLab* and publicised via *Talk to US!*.

Celebration Events in 2014 and 2016.

Focus group interviews with school pupils – one teacher commented that pupils were 'chuffed' and 'excited' about being involved in 'real-life research' and that their opinions were being listened to.

3: THE IMPACT AND INFLUENCE OF YOUR SUPI PROJECT

a) Please summarise the impact(s) of your SUPI project across its lifetime

Note that activity day', 'engagement day' or 'university day' refers to an on-campus visit day through any of our eight sub-projects.

STUDENT DEMOGRAPHICS AND PROJECTS

Table 1 shows the overall student ratings of the activity leaders by all 273 students who completed the post-engagement day survey.

Table 1 - Ratings of the activity leaders for students' visits to the university by all students who completed the post-engagement day survey (N=273)

Rating	Percentage
Excellent	39.1
Good	56.4
Average	1.1
Undecided	3.3

The 238 students who took part in the surveys both before and after the university day were Year 8 (52.9%) or Year 9 (47.1%) students. The sub-projects they took part in were *Chemistry* (20.2% of survey students took part in this sub-project), *Murder in the Medical School* (11.3%), *LifeLab* (13.0%), *Dragonfly Day* (29.0%) and *Discover Oceanography* (26.5%). It is their survey responses that are presented in the following results, in order to be able to make comparisons between the before and after answers of the same group of students.

As Table 2 shows, the student survey responses before and after the university day show a slight increase in positive feelings about science at school, and a notable increase in interest in studying a science subject post-16 and in confidence at carrying out scientific investigations at school. There was a negligible decrease in interest in going to university to study any subject, with slightly more students saying they were not sure after the university day.

Table 2 - Answer frequencies to pre- and post-engagement day survey questions by 238 students who completed both surveys

Question	Answer	Before engagement day %	After engagement day %
How interested are you in studying a science subject after your GCSEs?	'Not at all' or 'not very' interested	16.8	15.7
	'Quite' or 'very' interested	42.8	48.1
	'Not sure'	40.3	36.2
How interested are you in going to university (to study any subject) after school?	'Not at all' or 'not very' interested	5.9	6.0
	'Quite' or 'very' interested	70.6	70.2
	'Not sure'	23.5	23.8
How do you feel about science at school?	'I hate it' or 'I don't like it'	4.2	2.1
	'I like it' or 'I love it'	81.5	82.6
	'I am not sure'	14.3	15.3
How confident are you at carrying out scientific investigations at school? (out of 10 with 10 being most confident)	0-4	6.3 (nobody indicated 0-1)	3.4 (nobody indicated 0-2)
	5-7	40.7	37.5
	8-10	53.0	59.1
Do you think the scientific research at the University of Southampton is directly relevant to your everyday life?	Yes	65.4	79.7
	No	34.6	20.3

In Tables 3 and 4, the answers to the same questions before and after the university day are shown separately for the group of students who indicated in the first questionnaire that they had a family member with a degree and the group who said they did not. We wanted to find out if they had different responses to these questions based on their family academic background.

Table 3 shows the responses of the 139 students who did have a family member with a degree only, and Table 4 those of the 98 students whose family members did not. (Note that one pupil did not answer this question.)

Table 5 shows the pre- and post-university day survey responses of all three groups (all students, 'with family degree', and 'without family degree') all in one table.

The group of students who have a family member with a degree show a notable increase in interest in studying science after their GCSEs at the end of the university day, as well as more positive feelings about science at school and an increase in confidence in carrying out science investigations at school. Even though more than two-thirds of these students already thought the research by the University of Southampton is directly relevant to their everyday life, 15% more students thought this was so at the end of the university engagement day.

It is striking, however, that there is a notable decrease in interest in going to university generally, although the percentage of students interested in doing so is still very high (more than 7 out of 10 before and after the university engagement event).

Table 3 - Answer frequencies to pre- and post-engagement day survey questions by 139 students who completed both surveys and who have a family member with a degree

Question	Answer	Before engagement day %	After engagement day %
How interested are you in studying a science subject after your GCSEs?	'Not at all' or 'not very' interested	14.4	11.5
	'Quite' or 'very' interested	48.2	54.7
	'Not sure'	37.4	33.8
How interested are you in going to university (to study any subject) after school?	'Not at all' or 'not very' interested	3.6	5.0
	'Quite' or 'very' interested	77.0	71.9
	'Not sure'	19.4	23.0
How do you feel about science at school?	'I hate it' or 'I don't like it'	5.0	3.6
	'I like it' or 'I love it'	84.9	87.1
	'I am not sure'	10.1	9.4
How confident are you at carrying out scientific investigations at school? (out of 10 with 10 being most confident)	0-4	5.0 (nobody indicated 0-2)	2.2 (nobody indicated 0-3)
	5-7	37.4	32.4
	8-10	57.6	65.5
Do you think the scientific research at the University of Southampton is directly relevant to your everyday life?	Yes	67.4	83.8
	No	32.6	16.2

In Table 4, responses to the same questions are shown for the group of students who indicated that they did not have a family member with a degree only. In contrast with the responses of the students with a family member with a degree, there was a marked *increase* in interest in going to university to study any subject. These students, however, on average felt the same about science before and after the university day, but they also showed an increase in interest in studying science post-16, and reported feeling on average slightly more confident at carrying out scientific investigations at school. After the university day, 10.4% more students thought that the scientific research at the University of Southampton is directly relevant to their everyday life than before the day.

Table 4 - Answer frequencies to pre- and post-engagement day survey questions by 98 students who completed both surveys and who did not have a family member with a degree

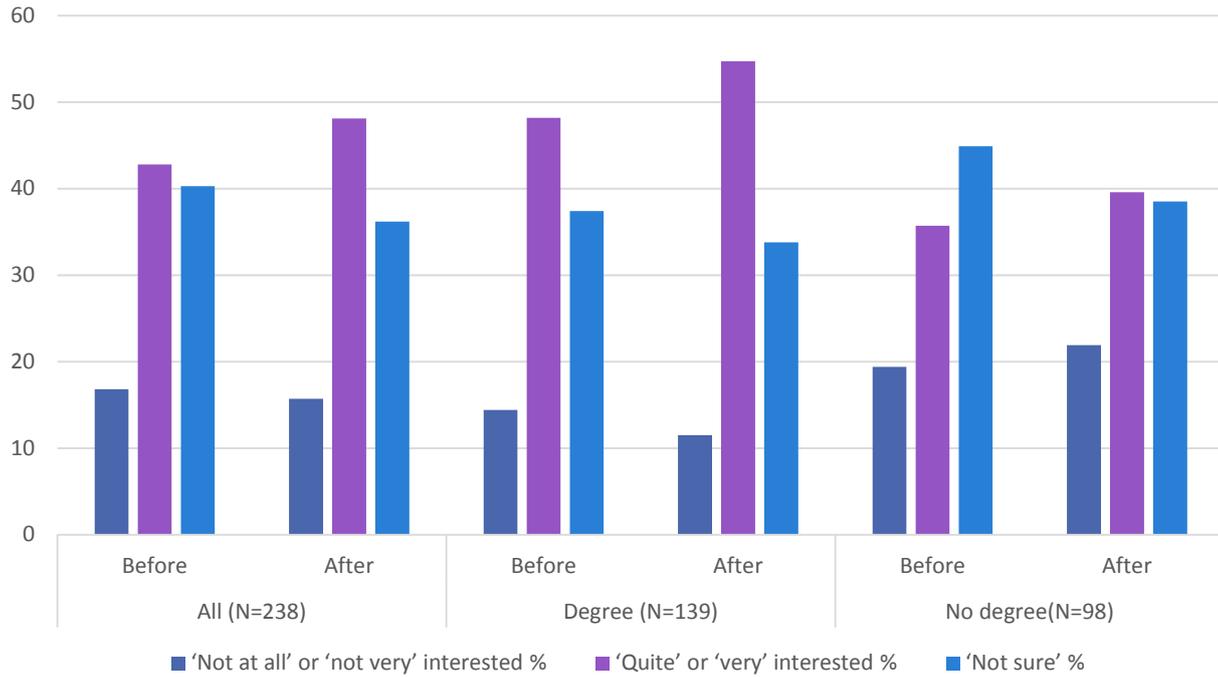
Question	Answer	Before engagement day %	After engagement day %
How interested are you in studying a science subject after your GCSEs?	'Not at all' or 'not very' interested	19.4	21.9
	'Quite' or 'very' interested	35.7	39.6
	'Not sure'	44.9	38.5
How interested are you in going to university (to study any subject) after school?	'Not at all' or 'not very' interested	9.2	7.3
	'Quite' or 'very' interested	62.3	67.7
	'Not sure'	28.5	25.0
How do you feel about science at school?	'I hate it' or 'I don't like it'	3.1	0.0
	'I like it' or 'I love it'	77.5	76.0
	'I am not sure'	19.4	24.0
How confident are you at carrying out scientific investigations at school? (out of 10 with 10 being most confident)	0-4	8.2 (nobody indicated 0-1)	5.2 (nobody indicated 0-2)
	5-7	44.9	44.7
	8-10	46.9	50.1
Do you think the scientific research at the University of Southampton is directly relevant to your everyday life?	Yes	63.3	73.7
	No	36.7	26.3

Table 5 shows all the findings discussed above in one table, following which graphs are included showing the responses to all five questions in the table, according to the groups' responses before and after the university day.

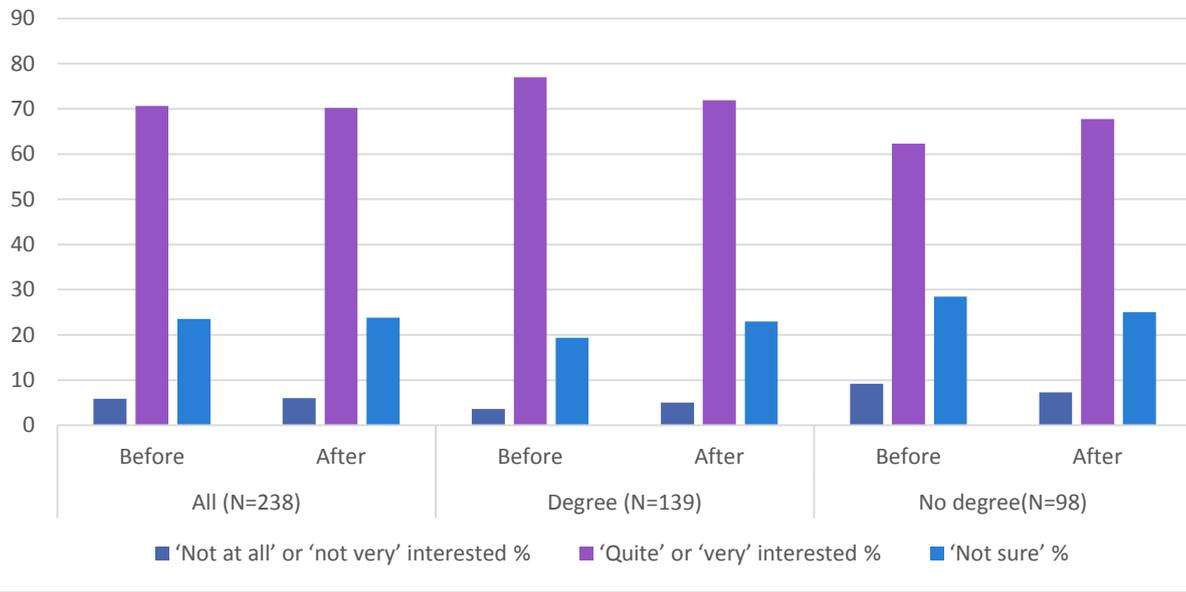
Table 5 Answer frequencies to pre- and post-engagement day survey questions by 238 students who completed both surveys

Question	Answer	Before engagement day %			After engagement day %		
		All (N=238)	Degree (N=139)	No degree (N=98)	All (N=238)	Degree (N=139)	No degree (N=98)
How interested are you in studying a science subject after your GCSEs?	'Not at all' or 'not very' interested	16.8	14.4	19.4	15.7	11.5	21.9
	'Quite' or 'very' interested	42.8	48.2	35.7	48.1	54.7	39.6
	'Not sure'	40.3	37.4	44.9	36.2	33.8	38.5
How interested are you in going to university (to study any subject) after school?	'Not at all' or 'not very' interested	5.9	3.6	9.2	6.0	5.0	7.3
	'Quite' or 'very' interested	70.6	77.0	62.3	70.2	71.9	67.7
	'Not sure'	23.5	19.4	28.5	23.8	23.0	25.0
How do you feel about science at school?	'I hate it' or 'I don't like it'	4.2	5.0	3.1	2.1	3.6	0.0
	'I like it' or 'I love it'	81.5	84.9	77.5	82.6	87.1	76.0
	'I am not sure'	14.3	10.1	19.4	15.3	9.4	24.0
How confident are you at carrying out scientific investigations at school? (out of 10 with 10 being most confident)	0-4	6.3	5.0	8.2	3.4 (nobody indicated 0-2)	2.2 (nobody indicated 0-3)	5.2 (nobody indicated 0-2)
	5-7	40.7	37.4	44.9	37.5	32.4	44.7
	8-10	53.0	57.6	46.9	59.1	65.5	50.1
Do you think the scientific research at the University of Southampton is directly relevant to your everyday life?	Yes	65.4	67.4	63.3	79.7	83.8	73.7
	No	34.6	32.6	36.7	20.3	16.2	26.3

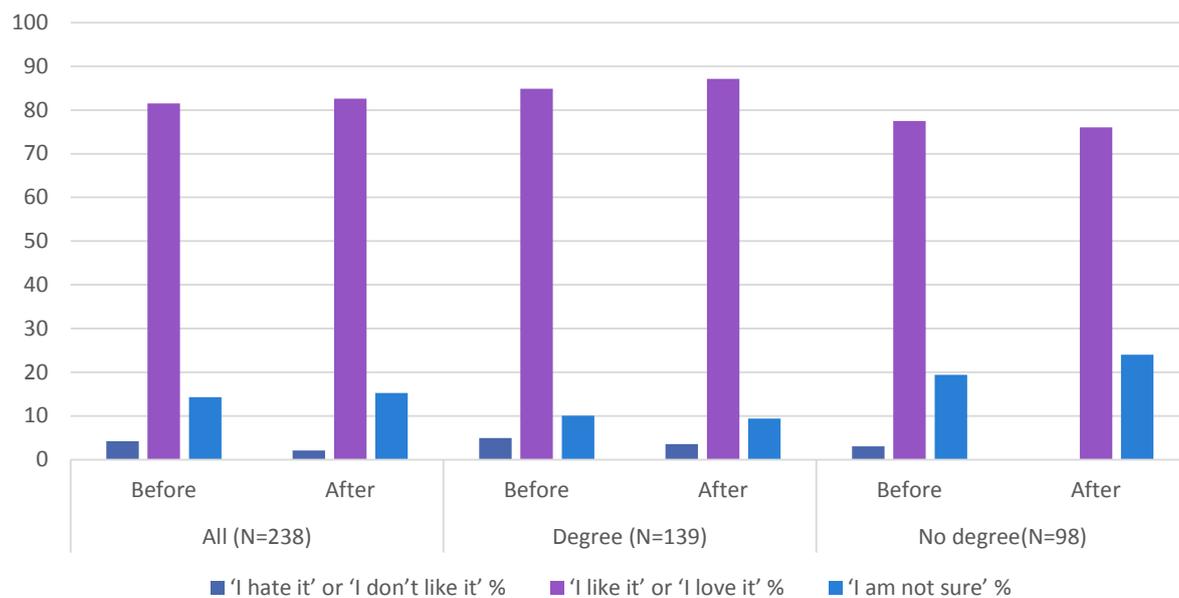
How interested are you in studying a science subject after your GCSEs? (Before and after the university engagement day)



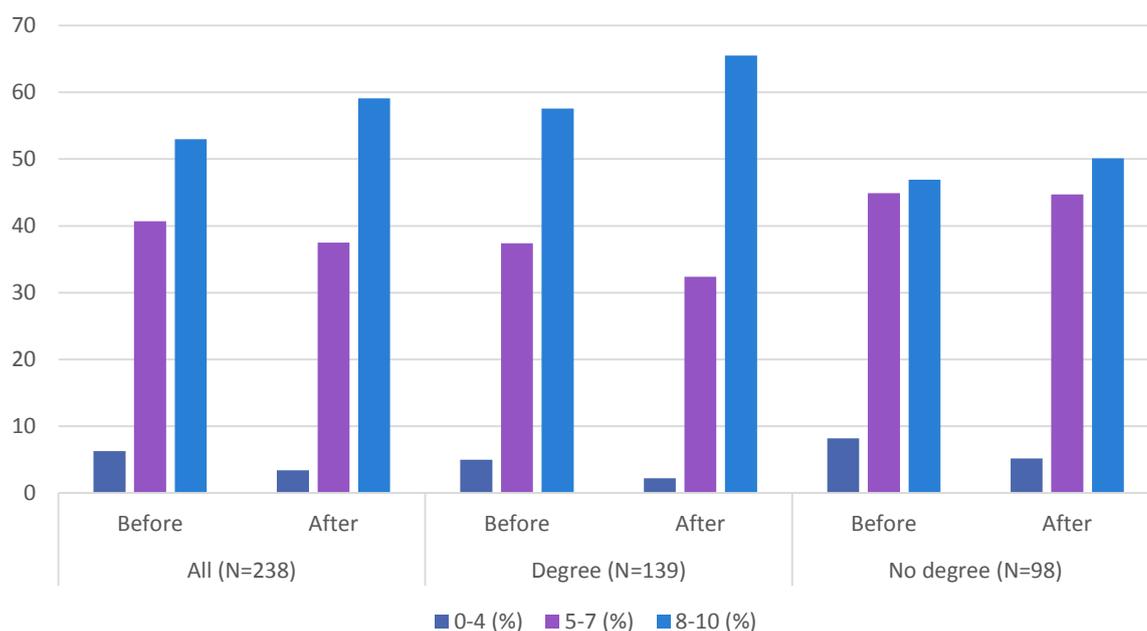
How interested are you in going to university (to study any subject) after school? (Before and after the university engagement day)

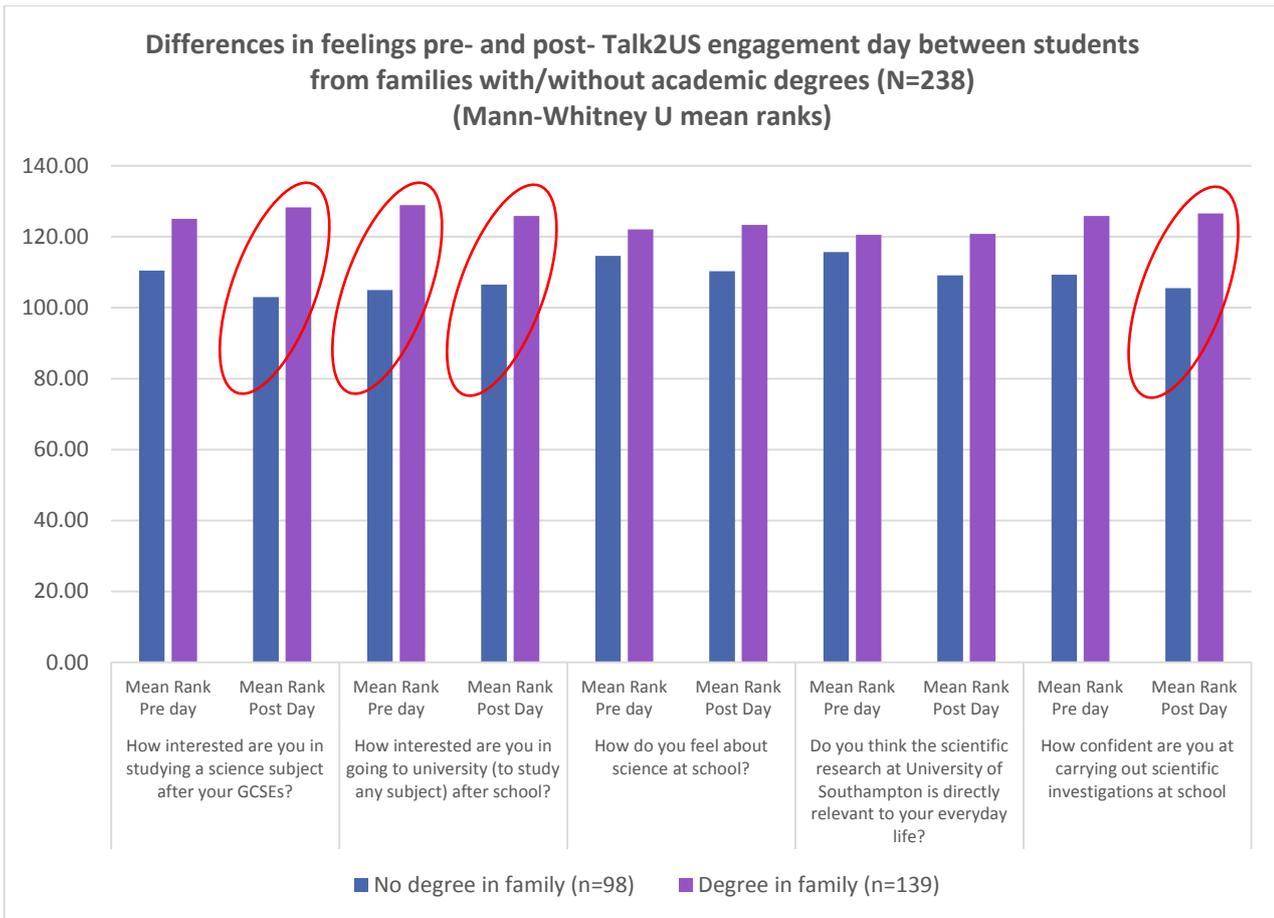
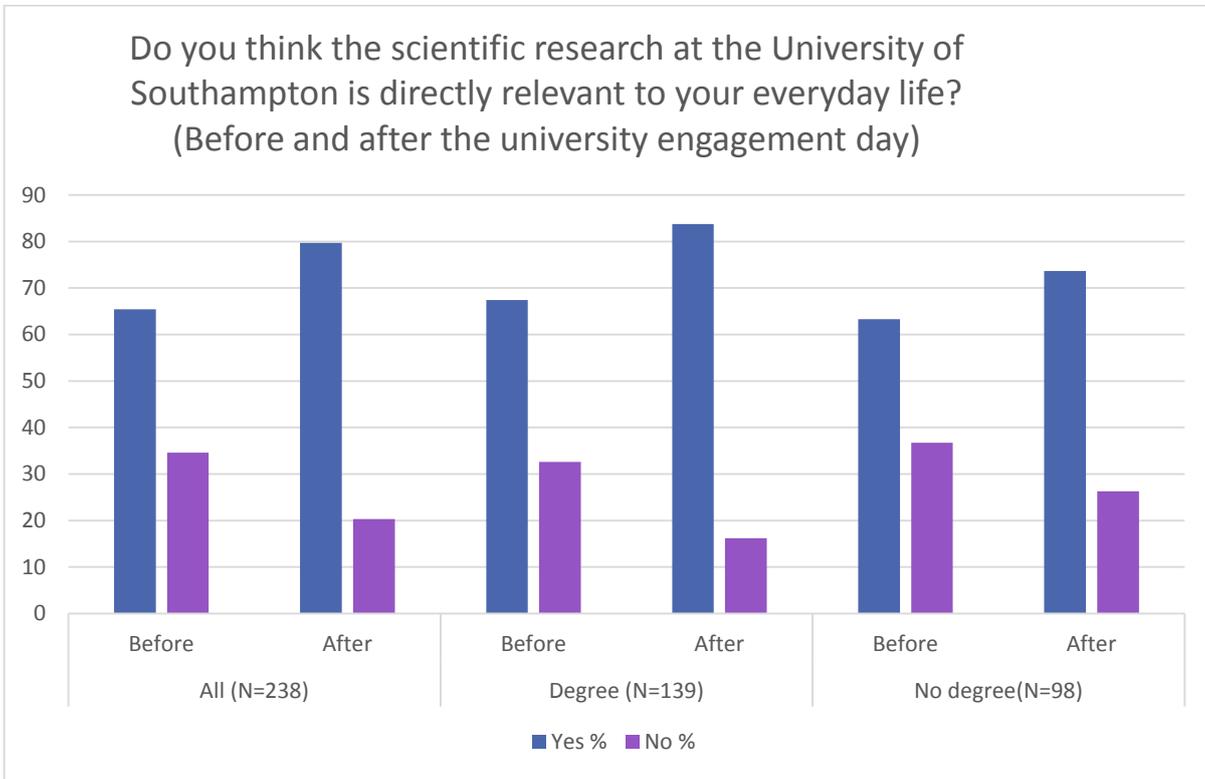


How do you feel about science at school? (Before and after the university engagement day)



How confident are you at carrying out scientific investigations at school? (Before and after the university engagement day; out of 10, with 10 being most confident)





(The red ellipses indicate significant differences between the 'degree in family' and 'no degree in family' groups.)

As the final graph shows, the results of Mann-Whitney statistical analyses of the pupil pre- and post-visit questionnaire data suggested that for pupils with no family member with a degree there was an average *decrease* in interest in studying science post-GCSE and an average *decrease* in confidence in carrying out scientific investigations at school.

In order to investigate this trend, which was clearly converse to the aims of the project, focus group interviews were carried out with the 'no family degree' pupils. Pupils from six different schools were interviewed and a broad spectrum of themes emerged, including some which were completely unexpected and unprompted by the conversation-starting questions. The trends of decreased interest in studying science and decreased confidence in carrying out scientific investigations were not repeated in the focus group interview data.

Reponses in the interviews generally took two forms, either, 'The day inspired me to do science' or, 'The day was good but it didn't change my mind about studying science'. This is much more positive: while it would be naïve – and, indeed, unhelpful as all subjects are of course valid and valuable – to assume that any one experience could universally encourage all pupils to take an interest in the non-compulsory study of science, and therefore it is neither unexpected nor unfortunate that some pupils said that they did not want to study science subjects post-GCSE, the results of the interviews have largely alleviated the concern that the experiences were *discouraging* pupils from a continued interest in science, particularly a group of pupils which studies have shown are already likely to be less engaged with science and research (see, for example, the work of the ASPIRES project on Science Capital). It is, of course, something to continue to be wary of and all sub-projects have been encouraged to continue with evaluation of their activities post-project end.

From the focus group interviews, the following recurring themes have been identified in terms of factors from the visits that influenced pupils' interest and confidence in the science subjects discussed at the sessions as well as science more generally:

- The day made me realise you can take science a lot further than school (different jobs you can do with it),
- The day made me realise that being a scientist has far more options than the stereotypical things,
- I didn't realise that scientific research could be so hands-on,
- The day made me understand the relevance of scientific investigations at school,
- The day made me more confident to participate in scientific investigations at school,
- The day made me realise asking questions is important in science and means you're interested rather than dumb,
- The day made me more independent in doing investigations at school,
- The day changed my stereotypical images of scientists,
- The day made me more inquisitive/engaged in science at school,
- I enjoyed doing more genuine science work than at school (real data samples, self-collected, better equipment, one each rather than sharing),
- The set-up of the day made us feel more independent,
- The day made me think about the broader aspects of what we're doing in school,
- The day showed the relevance of science/scientific research.

Interestingly, the phrase 'eye-opening' was used again and again by pupils, from different schools and without it being used by those conducting the interviews. The phrase was used to describe a variety of things and experiences, from the many and diverse courses available to study at university, the range of STEM jobs available (both with and without university qualifications), how advanced and/or expensive the equipment

researchers use is, the nature of the university environment and more, as discussed in the themes presented below.

The focus groups also reaffirmed the trend seen both here and in the analysis of the data that the 'no family degree' pupils showed an increased interest in going to university to study any subject, suggesting that those who were unsure about university had been encouraged to consider it as an option. As one pupil said, after a visit to *Discover Oceanography*, "I wasn't quite thinking of going to university before but now it could be for me." There were also those pupils who had already decided on the profession they wanted to follow and, as it didn't require a degree, they knew before the visit that they didn't want to go to university and the visits, though interesting, did not change their minds on this.

Of the factors of the visits that encouraged pupils to consider going to university, the themes identified from the focus group interviews are:

- The university is a big, spacious, modern, clean, cool, free environment with lots of opportunities (surprised by this),
- Didn't expect the kind of/cost of the facilities at the university,
- I realised that the image of studying at university being just book work is wrong,
- I didn't realise that you can do hands on work at university (and go out/off campus),
- The day inspired me to go to university.

As to why the 'family with degree' group appeared to show a decrease in interest in going to university, remains a question requiring further investigation.

TEACHER SURVEY RESPONSES

The participating teachers were given a survey before participating in the university event and afterwards. Some of the quantitative questions asked were identical in both surveys, allowing for an assessment of the possible impact of the project.

The pre-university engagement day survey counted 14 respondents and the post-event survey 9 respondents. Of the 14 initial respondents, 1 teacher participated in the *Murder in the Medical School* sub-project, 5 in *Dragonfly Day*, 4 in LifeLab, and 4 in *Discover Oceanography*. In the post-event survey, this was 1, 2, 3 and 3 respectively for these four sub-projects.

Eight individual teachers responded to both questionnaires, allowing for a paired comparison (using the Wilcoxon signed ranks test) between the responses to four identical questions in the two surveys. Below, the findings are presented.

In the post-university event survey, all 9 teachers (100%) indicated that the project had had a positive impact on pupils' engagement in science at school. Eight teachers (88.9%) thought the project will have a positive impact on pupils' decision to go to university. All 9 teachers (100%) said they would recommend the project to other schools or teachers.

Table 6 shows the responses to the identical questions in both surveys, including the results of the Wilcoxon tests. They show a marked increase in teachers' estimations of the proportions of pupils who perceived academic research to be relevant to their everyday lives, who understood the purpose of it (with both of these differences being statistically significant), and who understood the scientific concepts involved in the research.

The teachers also indicated a higher active engagement with the *Talk to US!* project in the post-event questionnaire than they expected beforehand.

Table 6. Teacher responses to identical questions in the pre- and post-university event surveys with Wilcoxon signed ranks test statistics of the difference between pre- and post-event responses

Survey Question	Answer (0= None; 10= All)	Pre-university day %	Post-University Day %	Wilcoxon Z and significance levels of the difference
What proportion of your students do you think currently perceive academic research to be relevant to their everyday lives?	0-4	63.6%	0.0	Wilcoxon signed ranks test statistic Z=-2.070; p=0.038*
	5-7	18.2%	55.5%	
	8-10	18.2%	44.5%	
What proportion of your students do you think currently understand the purpose of the research carried out by university academic staff?	0-4	75%	0.0%	Wilcoxon signed ranks test statistic Z=-1.997; p=0.046*
	5-7	16.7%	44.5%	
	8-10	8.3%	55.5%	
What proportion of your students do you think will understand/understood the scientific concepts involved in the research carried out by university academic staff?	0-4	58.3%	0.0%	Non-significant difference
	5-7	33.3%	44.5%	
	8-10	8.3%	55.5%	
What proportion of your students will be/were actively engaged with the <i>Talk to US!</i> project?	0-4	8.3%	0.0%	Non-significant difference
	5-7	33.3%	22.2%	
	8-10	58.4%	77.7%	
What proportion of your students are interested in doing a university degree (in any subject)?	0-4	33.3%	N/A	N/A
	5-7	25.0%		
	8-10	41.7%		

b) Please summarise any influence your SUPI project has had on your institution, its culture, or that of any other institutions, cultures and projects/initiatives.

The *Talk to US!* project manager role played a very important part in bringing together stakeholders, both external and internal to the University. Particularly within the university, groups across the institution who worked with to schools who had been aware of each other but did not have a reason to come together regularly – *Talk to US!* provided this reason and the project manager facilitated the meetings. In increased interconnectivity of key groups such as Outreach, PERu and SEdS has led to a more strategic effort in the University's communications and interactions with schools, as well as the sharing of resources and information and a combined effort in tackling common issues. An example of this is the time-consuming and expensive nature of booking transport for on-campus school visits. After it became apparent that this was a common issue, the project manager arranged meetings and discussions on this topic and, as a result, a review of the transport booking system involving the University's Transport and Procurement teams, the Outreach team and *LifeLab* is underway. The procurement team are welcoming this 'on the ground' in-put into their review as they had no access to this information before and have suggested a cost ceiling could be applied to the new framework, preventing price fluctuation currently experienced and hence making large savings. The possibility for the Outreach and *LifeLab* teams to reduce the staff hours spent on the currently onerous task of transport booking and ensure a more consistent service is clearly of benefit, and by maintaining a common thread of connectivity via the SUPO role, any future transport bookings will be made aware of these improvements.

Examples like these have proven the value of the facilitator role. Before the *Talk to US!* project, the responsibility of organising such meetings and bringing these people together didn't lie with any one party and, given workload and competing responsibilities, this meant that, although value was seen in the connections as seen by the readiness to meet, the meetings generally didn't happen. Having a person in post whose role included organising and facilitating such meetings gave the extra energy needed to bring people together. Another advantage of the facilitator role was to create a dedicated outward-facing point of contact for schools, as well as a dedicated inward-facing point of contact for those wishing to engage with schools. The benefits of this were clearly shown throughout the *Talk to US!* project, as a result of which the SEdS, PERu and Outreach teams invested in the SUPO role, to continue this facilitation work. They are also continuing to embed the learnings from *Talk to US!* in the university infrastructure, influencing the University's approach to working with schools and its cultural attitude towards public engagement and Outreach.

The *Talk to US!* project manager and PI have also been lobbying for more recognition for University staff for engagement work by raising the issue repeatedly with the PERu and Outreach teams, the EUSG and PEN and generally continuing the conversation wherever possible. The University Chemistry department currently includes 35 hours per year in full-time academic workload although it is not strongly protected in the appraisal process. Thanks to the tireless work of the Physics & Astronomy Outreach Co-ordinator, the department has recently included 50 hours per year in full-time academic workload. Both through *Talk to US!* and the new SUPO role, this information is being disseminated more widely and more encouragement given to staff to use this. Furthermore, during the *Talk to US!* project it was learnt that the University's professional services staff also have the ability to take (paid) time out of work to volunteer in projects with for example, members of the HR team were granted permission to attend a local school career event to hold mock interviews for Year 10 students. Unfortunately in this case the school dropped out of contact and so the staff did not attend the event but they reported to the *Talk to US!* project manager that they were glad that they had discovered that this was possible and would be keen to engage in such events in the future.

The engagement training offered to University staff was under review by the PERu team in the fourth year of the *Talk to US!* project as it was in that year that they were awarded longer term funding. It also became apparent that a lot of valuable learning was captured in the *Guide Book* which could be better shared through interactive sessions. Finally, through the *Talk to US!* project being hosted by the SEdS, the expertise in school and school teacher and pupil held there was highlighted. Bringing all three aspects together, a training session following on from *LifeLab's* 'Meet the Scientist', supporting researchers in developing and delivering interactive activities, workshops and sessions for schools and school pupils was suggested. Through *Talk to US!* and then the SUPO role, a working group was created consisting of a local teacher who had approached the University to engage more with it, a member of the SEdS ITE staff who approached the *Talk to US!* project manager after an ideas and proof of concept session was run with all ITE staff, and a member of the Outreach team who had also recently worked as a teacher and who approached the then SUPO after sharing the concept at an Outreach team meeting. Another local teacher who had worked with both PERu and *LifeLab* in creating a previously run engagement training session and the 'Meet the Scientist' training also expressed an interest in joining the working group and has unfortunately been prevented from doing so so far due to family reasons but is hoping to reengage during or after Summer 2017. The fact that all the members of the working group offered to work on the training session rather than being asked to do so has led to them being incredibly motivated and bringing much more to the project than could have been anticipated. They have agreed to run a pilot session in October 2017 and so far 16 researchers have expressed an interest in the session with others saying they are interested but already have other commitments on the suggested date. The researchers were invited personally to the session by the SUPO as researchers who had already engaged in public engagement and Outreach activities, who would both benefit from the training but also be able to offer valuable feedback to the working group. Based on this it is hoped that the session will be run regularly throughout the year by ITE staff, raising the profile of the SEdS and their expertise across the University.

Both the training in development and the fact that the SEdS hosted *Talk to US!*, as well as the instrumental role that the Dean of the Faculty in which SEdS sits played in securing the longer term funding for PERu, has helped embed SEdS further into whole university infrastructure. The *ACoRNS* project, run by the SEdS Director of Research, is also raising an awareness of engagement with research outside of being participants in research within SEdS, and hence raising the profile of SEdS outside of the University. The perception of SEdS is changing to include being source of expertise on successful engagement particularly, but not exclusively, with schools – which is clearly of benefit to the institution as a whole.

4: PUBLICATIONS AND PRODUCTS

a) Please list any publications that have resulted from your SUPI project

Research papers in progress, due for submission in 2017 (working titles, final titles may change):

- How a university STEM engagement day impacted on students from non-academic backgrounds to consider going to university.
- 'It was nothing like science at school': how a STEM engagement day at University impacted on secondary science students' feelings about and attitudes towards science.

b) Please list any products e.g. artistic, creative or educational material outputs that have resulted from your SUPI project.

- The Building School-University Partnerships Guide Book (or *Guide Book*),
- The online version of the *Guide Book*: www.efolio.soton.ac.uk/blog/talk2usguidebook,
- The *Discover Oceanography* online teachers' toolkit (in development, due for launch September 2017),
- The *Discover Neuroscience* online teachers' toolkit and EPQ support (in development),
- The development of *Hospital Heist* online resource pack allowing schools unable to come onto campus for *Murder in the Medical* to have a similar experience by running it in their own schools,
- The creation of a Girl Guide momento badge for the STEM Visit Day that grew from *Dragonfly Day*,
- Training for researchers wishing to engage with schools following on from 'Meet the Scientist' (in development).

5: AWARDS AND RECOGNITION

Please list any awards or recognition associated with your SUPI project

A key achievement so far of the SUPO role and the connectivity of the SEdS, Outreach and PERu teams was the delivery of a Teacher Zone and Teacher Trail at the Science and Engineering Day. The day, which is the flagship event of the annual Southampton Science & Engineering Festival (SOTSEF), is one of the university's highest profile annual engagement events with upwards of 7,000 visitors from diverse demographics across the city and beyond. Although it is known that many teachers attend the day, often with their families, it was as a result of the SUPI project that specific activities were targeted directly at them.

As well as offering free refreshments and goody bags for the teachers, we showcased: engagement projects and activities, from *LifeLab* to *Murder in the Medical School*, Computing at School to Stimulating Physics; a chance to test-run the online version of the *Talk to US! Guide Book*; and networking with other teachers from across the country including those that are already working extensively with the university. We also created a 'Teacher Trail' map of the other activities on offer during the day, highlighting, for example, those with demos that could be taken straight to the classroom. We also co-ordinated with colleagues from the MSLC and the ITE team who were organising an ASE mini-conference on the same day and successfully encouraged attendees to visit the Teacher Zone (and the Science & Engineering Day) afterwards.

The initiatives were incredibly popular with both teachers and exhibitors and it was recognised by the SOTSEF team in the form of an award for 'Best Collaboration'!

The project was also featured extensively in an article in the Guardian after interviews with the project manager, sub-project leads and local teachers involved in the project: <https://www.theguardian.com/teacher-network/2017/mar/10/science-schools-universities-research-partnerships>

6: COLLABORATIONS AND PARTNERSHIP

Please provide details of any significant collaborations and partnerships that have resulted from your SUPI project

Through the amazing work of key teachers and particularly through the *Murder in the Medical School* sub-project and development of training for researchers, strong partnerships have been created between the university and Hounslow School, Wildern School, Bitterne Park School and Allsaints School. Said key teachers have been given a greater insight into the inner workings of the university through *Talk to US!*, have made a range of contacts and are now furnished with a greater capacity to engage with the university. In particular, the

collaboration between the BIU and the teacher contact at Hounslow has been especially productive and inspiring, and continues to grow!

A key legacy of the project is the increased connectivity within the university. The close working of *Talk to US!* with both the PERu team in their newly formalised state and the Outreach team led to the consolidation of links between these teams which means that both these key forces within the university are now much more aware of each other and are working more closely to better complement their endeavours. The involvement of the Education School in university-wide engagement projects has also been increased and its profile has been raised across the university as a place to make connections with schools. The involvement of all three groups in the strategic EUSG is also an important part of the legacy of the project.

7: FURTHER FUNDING

Please list all further funding that your SUPI project has leveraged across its lifetime

No further funding was leveraged.

8: SKILLS AND PEOPLE

a) Please list any skills related developments that have taken place as part of, or as a result of your SUPI project

LifeLab sub-project's 'Meet the Scientist' training: Although aimed at recruiting researchers (not just scientists!) to take part in the 'Meet the Scientist' sessions in the *LifeLab* visit days (where researchers share a table with a group of school pupils who get to ask them first-hand about their work and life as a researcher), this full-day training session is open to all and offers a broad skillset. *Talk to US!* helped promote the session across the university and support conversations with the newly formalised PERu, with links to the Doctoral College (who organise, amongst many other things, university-wide training for postgraduate students), and the ITE staff in the SEdS (where *Talk to US!* was hosted).

Further training development: In its fourth year, *Talk to US!* also worked with a local teacher (who had approached us independently about engagement opportunities) to develop the concept of training for researchers engaging and working in partnership with schools more generally, to complement 'Meet the Scientist', using the learning from the *Guide Book* as well as the expertise of *LifeLab*, the ITE staff and the teacher themselves. This was met with a positive and enthusiastic response and, as a result, a development team consisting of the SUPO, a local teacher and a member of ITE staff, with input from the Outreach team, are working to deliver a pilot session in October 2017.

b) Please list any secondments placements and internships to or from other organisations associated with your SUPI project

No formal secondments or internships took place outside the university, however, a recently graduated Masters student (who went on to project manage a NERC-funded public engagement project 'Education in the Green Space') was taken on to create the online version of the *Guide Book* (completed) and the *Discover Neuroscience* online teachers' toolkit and EPQ support with the *Biological Sciences* sub-project. Ownership of these online resources has been placed with a permanent member of the Outreach team who has a background in web development, as an acknowledged part of their workload. Over the summer, while the SUPO is away for a 12 week sabbatical, responsibility of co-ordinating the researcher training programme has been delegated to the Outreach team member in the working group. With the support of Outreach and PERu, the SUPO is looking to create an internship to develop the activity mapping visualisation tool. Foundations have also been laid for an

engaged teacher who is currently working part time to be taken on at an hourly rate to continue to develop resources, supported by the Outreach team who are also looking to use their expertise and advice.

9: OTHER

Please state here any other information associated with your SUPI project that you would like RCUK to know as part of final reporting.