

ENGINEERINGUK EDI BURSARY SCHEMES 2021/22

Neon, EEP Robotics Challenge,
Big Bang at School and
The Big Bang Fair



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This report provides details of the EngineeringUK equity, diversity and inclusion (EDI) bursary schemes delivered in the academic year 2021/22. The bursary schemes distributed bursaries to schools who have higher proportions of students from groups that are under-represented in engineering and technology (identified using the [EngineeringUK EDI criteria](#)). The aim was to help these schools overcome barriers to participating in STEM engagement activity, ultimately ensuring more young people from these under-represented groups participate in such activity and are inspired into STEM and engineering careers. In 2021/22 the bursary schemes gave bursaries to support schools to participate in The Big Bang Fair, Big Bang at School, the Robotics Challenge and for schools to participate in the experiences listed on Neon. An evaluation report of the prior year EDI bursary schemes (2020/21) [is provided here](#).

KEY HIGHLIGHTS

129 bursaries were given to schools across the UK, who used this money to overcome barriers to taking part in STEM engagement activities - enabling thousands of young people to participate. The schools were geographically spread, with 9 in Scotland, 8 in Wales and 3 in Northern Ireland.

Schools spent the bursaries in a number of ways, which differed according to the programme - this included equipment which was specifically needed for the activity (such as more Robotics Challenge kits), equipment that would create a legacy from the activity, digital or in-person activities to enhance the experience or for paying for an experience listed on Neon.

Girls participating in STEM inspiration activity

A key aim of the bursary schemes was to enable schools to involve more young people from under-represented groups or for those under-represented groups to have a richer and more engaging experience than they otherwise would do.

The scheme reached a high number of girls schools. Additionally, for the scheme in which demographic data was collected (the Neon scheme) 56% of students who participated after their schools received a bursary were girls.

Socio-economic background

The bursaries were given to schools with high proportions of young people from lower socio-economic backgrounds - 84% of the schools who received a bursary had above average proportions of students eligible for free school meals - with a third of these schools having significantly above average proportions of students eligible for free school meals (see the [EngineeringUK EDI criteria](#) for a definition of these categories). Additionally, data from the Neon programme showed that giving funds to these schools did result in higher proportions of young people from low-income families participating - 36% of students who participated after their school received a bursary were eligible for free school meals (whereas the national average is 22% of students being eligible for free school meals in state funded secondary schools).

Disabled students and those with special educational needs

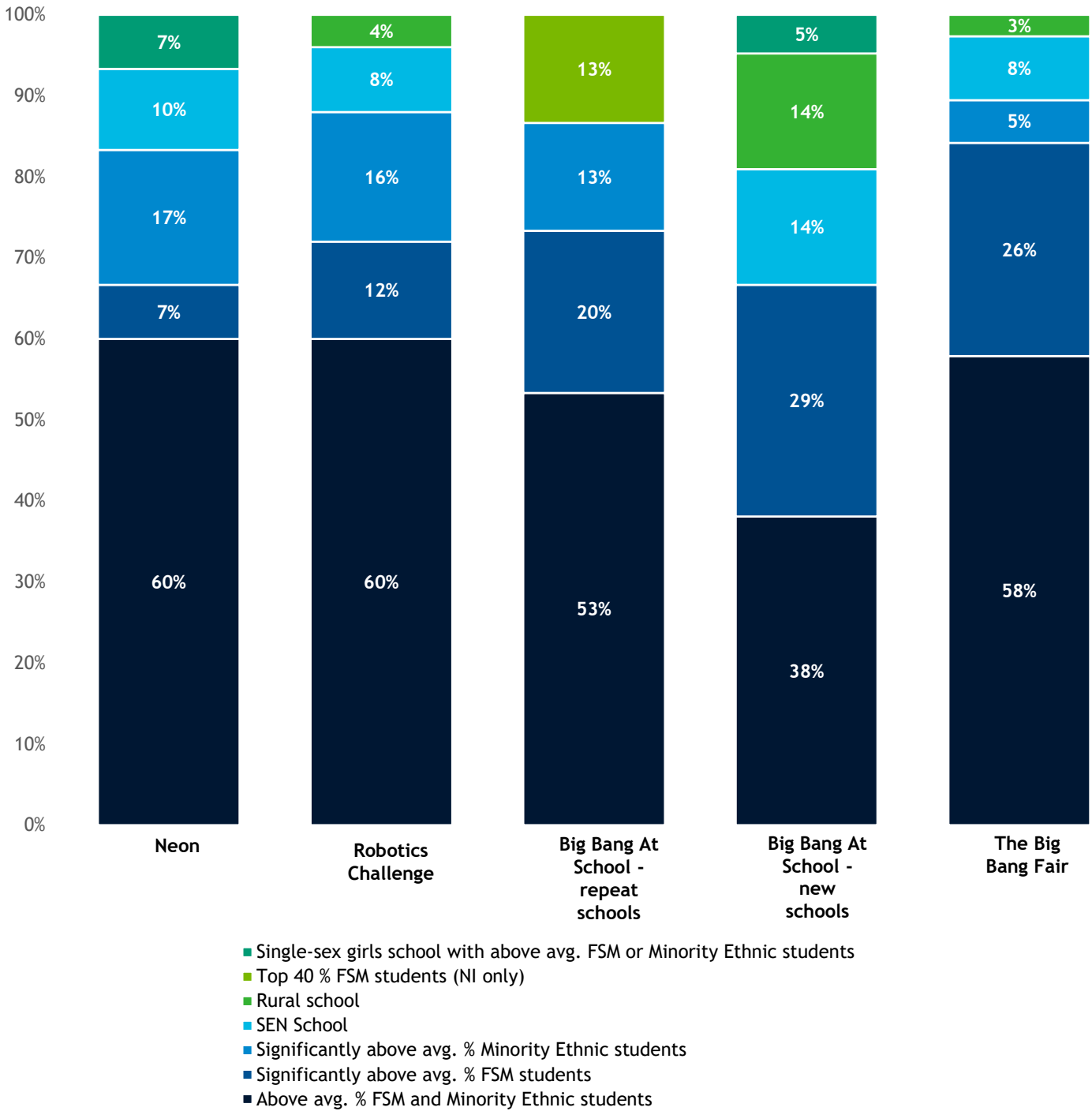
11 of the schools who received a bursary were special educational needs (SEN) schools.

Following evaluation, there is evidence of the different schemes having impact in different ways - see the Appendices for the full evaluation report of each of the 2021/22 bursary schemes.

The graph below shows the schools who received a bursary for each programme and the reasons they met the [EngineeringUK EDI criteria](#).

FIGURE 1

Types of schools receiving a bursary and why they met the EDI criteria



DETAILS OF THE 2021/22 EDI BURSARY SCHEMES

Below is a description of each of the bursary schemes delivered in 2021/22. This is complemented by the information in table 2 below which shows the number of schools who applied for a bursary, were offered a bursary and then ultimately completed the programme for which they received a bursary¹.

"As far as the bursary is concerned, it was the difference between us being able to go and being able to make a good show for ourselves and basically just turning up and bringing the numbers up.

...It made a significant impact. Without the bursary we would not have been able to do any of the tasks at all on the day and that is the bottom line."

- Feedback from a school who received a Robotics Challenge bursary in 2022.

FIGURE 2

The table shows the overall numbers of schools who applied for and were offered bursaries and then completed the programme for which they received the bursary.²

Programme & round	Eligible	Applied	Offered	Paid	Completed
Neon 2021/22	All EDI schools in the UK	95	69	30 will be paid (some invoices currently in process)	30
Robotics Challenge 2021/22	81	39	35	28	26
Big Bang at School -repeat schools 2021/22	23 schools targeted	The majority of the 23 targeted schools expressed interest in the bursaries.	23	12	16
Big Bang at School - new schools 2021/22		23	29	21	24
The Big Bang Fair bursary 2022	156 (this was the no. of EDI schools who attended The Big Bang Fair '22).	74 (of which 48 were eligible) ¹	48	38	38

¹ Some schools applied who did not meet the EDI criteria, as at that time the registration system did not prevent non-EDI schools from applying.

² numbers of schools in the table above may differ slightly from the evaluation reports (by 1 or 2 schools) due to the data being collated at different times. Additionally some invoices and payments were still in process at the time of reporting.

NEON 2021/22 BURSARY SCHEME

The Neon bursary scheme was originally established in spring 2021 and has now been run for the 2nd year in 2021/22. The aim of the scheme was to enable schools who meet the EngineeringUK EDI criteria to take part in a Neon experience and/or involve more of their students from groups that are currently under-represented in engineering and technology in this experience. Any EDI criteria meeting secondary school in the UK was eligible to apply for £700. EngineeringUK ran the 2021/22 Neon bursary in one round in February 2021. The scheme was widely promoted to schools, they applied through a web page where they could check their eligibility before applying. Schools who were offered bursaries in Spring 2021 were given until December 2022 to complete the Neon experience for which they had been offered funding (i.e. two school terms to complete this). Once they have completed the experience, they then had to complete a short 10-minute feedback survey confirming they had completed and they were then paid. One school came forward to request payment up front.

Thirty schools ultimately completed a Neon experience after being offered a bursary in 2021/22 reaching 3,500 students. The evaluation detailed in the Appendix highlights that:

- In schools that received a bursary, girls, students from ethnic minority groups and students in receipt of free school meals participated in a Neon activity in higher proportions than seen across the student population.
- As well as paying for specific activities, schools also used the bursary to buy equipment for the school which will have ongoing impact for a larger number of students.
- 90% of teachers agreed that the bursary motivated their school to take part in the activity and 83% of teachers agreed that it allowed them to involve more students from underrepresented backgrounds in the activity.

“It had the biggest impact on the most challenging kids in our school. It was these students who loved it and really got into it. It was a real hook for them...I think it improved their experience elsewhere in school”

- A school who received a bursary in 2020/21 academic year



EEP ROBOTICS CHALLENGE 2021/22 BURSARY SCHEME

The Robotics Challenge programme involves students working in a small team in school over a period of a few months to build a robot. The school can then choose to attend a regional heat where the team have an opportunity to compete with their robot and then an opportunity to go through to the national final.

The Robotics Challenge scheme in 2021/22 provided £300 bursaries to EDI criteria meeting schools who wished to participate in the Robotics Challenge. Schools could use these funds either to:

- widen the group of young people who participate to include more under-represented young people.

and/or

- enable the students who participate to attend the Robotics competition heats.

Any EDI criteria school planning to participate in the Robotics Challenge could apply, except for those who received a bursary in 2020/21. 26 schools completed the Robotics Challenge after receiving a bursary and the evaluation report in the Appendices includes highlighting that:

- Schools sought to use the bursary to widen participation to groups of students who are typically underrepresented in engineering careers, particularly female students, students from minority ethnic groups, and students with disabilities.
- The bursary allowed the purchase of additional kit which enabled more students to take an active part in the design and build of robots, roles that some students tended to be side-lined from when access to kit was limited.
- The bursary also allowed schools to cover travel costs which meant students from lower income households could attend the competition heats.
- Though many schools would still have taken part without the bursary, teachers felt that the bursary enabled the programme to reach more students and offer a better student experience.



THE BIG BANG AT SCHOOL 2021/22 BURSARY SCHEME

In 2021/22 The Big Bang at School programme offered schools bursaries to enable them to make the Big Bang at School experience even richer for students and even more engaging for those from groups under-represented in engineering. All EDI criteria schools participating in Big Bang at School programme in 2021/22 were eligible for a bursary, but received different amounts:

- ‘New’ schools taking part for the first time received £1000 and
- ‘Repeat’ schools who had participated in the previous year received £500.

Eligible schools were informed they could apply for a bursary when they expressed interest in the Big Bang at School programme - from February 2021 onwards. Those that wished to apply completed a short application form and all schools who did this and provided the necessary paperwork were offered a bursary, i.e. the intention was to give bursaries to all EDI schools participating in the Big Bang at School scheme in 2021/22. They were informed they were successful shortly after this and were then paid upfront as soon as possible (i.e., as soon as offered the bursary rather than after completion of the programme).

24 ‘new’ and 16 ‘repeat’ schools completed the Big Bang at School programme after receiving a bursary. There was a COVID spike around the time of delivery of this programme and The Big Bang Fair 2022, which may have contributed to the slight ‘drop-off’ and delay from those being offered a bursary to those completing the programme. The evaluation report in the appendix highlights that:

- The bursary money was largely spent on materials, resources and activities to enhance the Big Bang at School experience.
- Three quarters (76%) of teachers said that the offer of the bursary motivated their school to take part.
- Over 80% of teachers that received and spent the bursary said it meant that their students had a better experience of Big Bang at Schools than they otherwise would have.
- 73% of teachers said that the bursary had enabled them to involve more young people from groups underrepresented in engineering.
- 65% of teachers said that they wouldn’t have been able to take part in Big Bang at School without the bursary



THE BIG BANG FAIR BURSARIES 2021/22

In 2022 EngineeringUK established a bursary scheme to provide EDI criteria schools with financial support to help them attend The Big Bang Fair 2022. The aim was to enable more schools with high proportions of young people from groups underrepresented in STEM to attend The Big Bang Fair. In previous years financial support has been provided to schools to support them in this, however, this was not previously done on the basis of the EDI criteria, so would not have helped more young people from groups under-represented in STEM to attend.

Thirty-eight EDI criteria schools attended The Big Bang Fair after receiving a bursary. The evaluation report in the Appendix includes highlighting that attendance among schools that received a bursary was higher than among similar schools that did not receive a bursary, which may indicate that this encouraged schools to prioritise The Fair.



CONCLUSION

The EngineeringUK EDI bursary schemes are in their 2nd year and are clearly reaching schools around the UK with high proportions of young people from under-represented groups. From the one bursary scheme where EngineeringUK was able to collect demographic data, it was clear that students from under-represented groups participated in a Neon activity in higher proportions than seen across the student population.

The evaluation reports offer valuable teacher feedback regarding the bursary schemes, including their perspectives on the impact of the bursaries on various aspects. Specifically, the reports shed light on the extent to which teachers felt the bursaries influenced the school's ability to participate in the programmes, facilitated the inclusion of more students from backgrounds traditionally underrepresented in engineering, and enriched students overall experience of the programmes. EngineeringUK is running the schemes in 2022/23, drawing on learning from 2021/22 and will look to further develop the evaluation of these schemes.



APPENDIX 1:

Neon 2021/22 bursary scheme evaluation

KEY FINDINGS

- 30 schools completed a Neon activity for which they received a bursary, reaching over 3,500 students.
- In schools that received a bursary, girls, students from ethnic minority groups and students in receipt of free school meals participated in a Neon activity in higher proportions than seen across the student population.
- As well as paying for specific activities, schools also used the bursary to buy equipment for the school which will have ongoing impact for a larger number of students.
- 90% of teachers agreed that the bursary motivated their school to take part in the activity and 83% of teachers agreed that it allowed them to involve more students from underrepresented backgrounds in the activity.

ABOUT THE NEON BURSARY SCHEME

This report provides findings from the Neon bursary evaluation. The scheme allows schools to apply for a £700 bursary towards a STEM engagement experience listed on Neon.

Schools had to complete the Neon experience between April and December 2022.

Eligibility criteria

Bursaries were available to schools that:

- met EngineeringUK's equality, diversity and inclusion (EDI) criteria³
- demonstrated in their application form that the funds would be used in line with the aims of the bursary scheme.

The bursary was intended to enable schools to take part in a Neon experience and/or involve more of their students from groups that are currently under-represented in the engineering profession.

Applications

Applications were open during February 2022.

Teachers completed an application form and were asked how they would use the bursary to meet the aims of the scheme, and how they would recruit or select students to take part.

95 schools applied; 69 of these met the eligibility criteria and were offered a bursary.

Payment of the bursary

The bursary was paid after the school had completed the Neon experience and submitted a feedback survey.

³ Equality, Diversity and Inclusion criteria, based on student population with higher numbers from groups typically under-represented in engineering. For more detail, see [EngineeringUK EDI criteria - Tomorrow's Engineers](#)

PARTICIPATION IN STEM ENGAGEMENT ACTIVITIES

30 schools received a bursary for a Neon experience they completed (that's 43% of schools that were offered bursaries).

Teachers were asked to provide demographic data about the students who participated and to indicate how students were selected to take part in the programme.

Student demographics

In total, these schools have involved approximately 3,500 students in a Neon experience, with 56% being girls.

A higher proportion of students taking part were eligible for free school meals compared to all secondary school students (36% compared to 22.5%).

Students were also more likely to be of minority ethnic background compared to the national average (43% compared to 34%)

Selection criteria

Of the 30 schools that took part, 8 said that they specifically targeted students who would not typically have an opportunity to take part in this kind of experience.

11 schools said that all students in the school, a whole year group or class took part.

6 schools allowed students to self-select, including as part of an existing STEM club.

4 schools offered the activity to students who are taking STEM subjects.

The remaining school offered the activity to those who are not currently high achievers in STEM.

FIGURE 3 Number of students who participated

		Total participating students	3,559
Gender	Male		1404 (43%)
	Female		1824 (56%)
	Other gender identity		4 (<1%)
Ethnicity	Asian/Asian British		802 (23%)
	Black/Black British		346 (10%)
	Mixed/Multiple ethnic groups		267 (8%)
	White		1829 (53%)
	Other ethnic group		111 (3%)
	Don't know		126 (4%)
		Students eligible to receive FSM	1257 (36%)
		Students with a disability, impairment or special educational needs	708 (20%)

HOW THE MONEY WAS USED

The most common ways the bursary has been used so far are to pay for an experience listed on Neon (67%), purchasing materials to support the activity (23%) and purchasing equipment that will continue to be used beyond the Neon experience (23%).

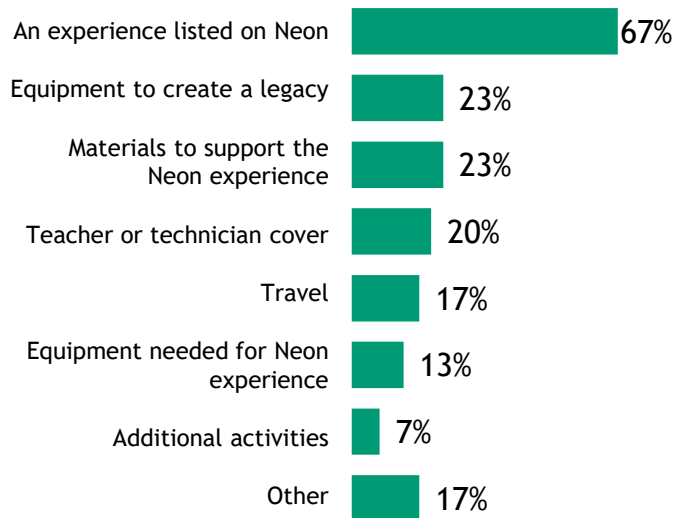
3 out of 5 teachers said that the bursary covered the whole cost of the activity. The other 40% said that they required additional funding to complete the activity, ranging from £20 to £1,260 more (median = £225).

IMPACT OF THE BURSARIES

Teachers were asked a series of questions to measure the impact of the bursary. They were asked to say how much they agreed or disagreed with the following statements:

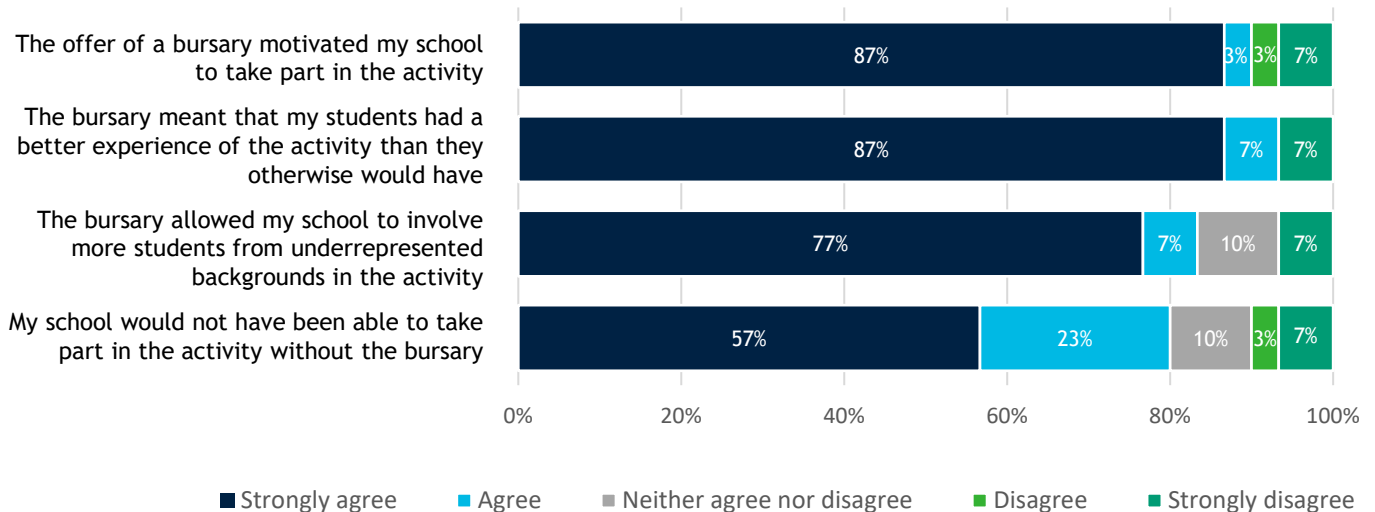
- 4 out of 5 (80%) teachers agreed that their school would not have been able to take part without the bursary and only 10% disagreed.
- All but 5 teachers (83%) agreed that the bursary allowed their school to involve more students from underrepresented backgrounds.

FIGURE 4 What teachers spent the money on (n=30)



- All but 2 teachers (93%) agreed that the bursary meant that their students had a better experience of the event than they otherwise would have.
- All but 3 teachers (90%) agreed that the offer of a bursary motivated their school to take part.

FIGURE 5 Teacher's views on the impact of the bursary (n=30)



FEEDBACK FROM TEACHERS

Reaching students from groups underrepresented in engineering

Several teachers reported being able to engage students who are typically less keen to get involved or who are underrepresented in engineering. Teachers described the positive impact of this on those students' aspirations and self-belief.

“additional support need pupils tend to get written off and say they're limited in what they can do, but they have seen what they can do coding”

“I've got bunch of girls that have really, really great practical engineering skills, and they're very accurate and [...] all those skills that would be great for engineering subjects.”

“That was great because the kids, their aspirations are very low and they don't have much exposure. The parents have lived in the area, the grandparents have lived in the area, they've lived in the area and you know, it's just getting them exposed to other things outside of [area]”

Inspiring students

Teachers described the inspirational impact of activities on students. Some students were carrying on the activities and developing their engineering skills in their own time.

“When we started using the controllers they actually started to come in and their break at lunchtime and want to continue programming what they were doing.”

“They were then taking the tutorials and they themselves were then extending them and seeing what else they could do.”

This inspiration has the potential to spread between students as well, as highlighted by one teacher:

“A girl who's very switched on to it and is now recommending to other pupils in school that they should take [STEM activity] next year [...] and she said to people who are younger down you should try [STEM activity]. It's great advertising for us because she's really enjoying it.”

Developing important STEM skills

The Neon experiences are helping students develop a wide range of STEM skills, both technical skills and softer, transferable skills like presenting, team work and resilience.

“they have to present what their findings are, they have to work as a team, [...] they have to make robots, programme it, design it and then they have to present to the rest of the class the design process and what went well and what didn't go well.”

“It's also trying to teach the kids that things don't just happen they've got to work at it to solve the problem because they're so, so used to just plug and play, you know?”

Careers curiosity

Teachers described the inspirational impact of activities on students. Some students were carrying on the activities and developing their engineering skills in their own time.

“I was getting asked an awful lot more questions about what they needed to do to... you know... further on in life.”

WIDER IMPACT

Although the bursaries were linked to specific activities through Neon, teachers used the opportunity to extend the reach and impact of the bursary across the school, and outside it, in various ways.

Peer-to-peer learning

A couple of teachers described how they had extended the reach and impact of the Neon experience through encouraging their students to run the activity with other students.

“The idea was that the science club would take part in [Neon experience ...] and then they are now trained up to go into science lessons and do activities within lessons and within science club after school and the idea is that they can carry on training people up and it'll be an ongoing thing.”

“Using my senior students as peer educators, basically they will go into my first years and my second years and they will work with them because especially in engineering skills communication is key”

Working with local primary schools

One teacher is using the equipment purchased with the Neon bursary to make connections with the local primary schools and start engaging students in engineering at a younger age.

“We managed to get a 3D printer for each primary school. [...] It was really great to have this kind of collaborative work. And they were really keen on having this resource that links to my school.”

“I'm hoping I get some of my students going down the primaries using this resource and so that benefits obviously the primary students, but also my students as they're going to develop a bit of leadership skills.”

Building STEM culture within schools

Schools are recognising, celebrating and sharing the success of the students who participate in the Neon activities, helping to build a STEM-positive culture across the school.

“[Management] recognise the skills that the children are achieving. They're very much into developing life skills They've agreed to embed it in the curriculum every year as part of the Duke of Edinburgh Award, so that to me is a leap of faith from them, it's a good thing.”

“It appears in things like our newsletter and gets posted up on our site.”

More than a 'one-off'

The teachers are keen to sustain the impact of the Neon bursary and purposefully selected Neon experiences that would be more than a one-off activity.

“We wanted something that wouldn't just be a one-off thing [...] if you do something with the group and it's a one off thing then it's kind of been and done and not everyone's benefited from it.

“I'm not a fan of one-off things. If you build momentum, then it's probably easier to keep it going rather than just do something and drop it.”

SUGGESTIONS FOR IMPROVEMENTS

Timing of the bursary

Teachers suggested that starting the bursaries in September and keeping it within the school year would help with the organisation and logistics of the activity and recruitment of students.

“It’s better to keep it in the school year because that way, if there’s any [staff] changes then you won’t affect the project.”

“the fact that we got [the kit] late and I could start at the beginning in September actually was a great help. You know, because it was set up, I didn’t have to change. [...] it was something new for a new term.”

“If you put the grant available in September and the project has to be done by June, [schools] can organise. Also, for example, if they run an extracurricular activity, there’s much more intake at the beginning of the year.”

Support with invoicing

Some teachers found the process of invoicing and sorting out budgets quite difficult and time consuming and would like a simpler process.

“Even if you say I’m going to get the money back, it’s just so many hoops to jump through”

“Maybe it would be easier if it was sort of paid, rather than us paying and claiming back, you could pay it on our behalf. [...] That that might be easier to just not have to worry about making sure we have that money.”

Support less engaged schools

The schools we spoke to were all highly engaged in STEM activities. Some felt that teachers who are less familiar may need more support in selecting Neon experiences.

“Maybe for some teachers it would be complicated because obviously there’s lots of choice [on Neon]. I knew I was going to work with STEM ambassadors and I’ve been working with them before [...] and I know how to to organise it and that it’s going to take a little time to set everything up.”

Offer more accessible experiences

Teachers would like to find more Neon experiences that are suitable for students with additional support needs and are easier to get to.

“I would like to see the actual experiences that you provide, maybe tailored more to students with additional support needs the people we had from [Neon experience] were brilliant”

“If we had some local experiences in [location] that we could try going out for a day experience instead of it all being done through computer online, I think would be a great development.”

Teacher feedback shows the value of supporting these engaged schools, in a flexible way, to do more STEM activities. Through the bursaries they were able to reach more students in more sustained ways. However, we found less evidence to suggest that the bursaries were motivating schools with less prior STEM engagement activity to start doing more. This may be an area to develop further.

APPENDIX 2:

EEP Robotics Challenge 2021/22 bursary scheme
evaluation

KEY FINDINGS

- 35 schools were offered a bursary and took part in the Robotics Challenge activities. Of these, 26 participated in the Challenge heats.
- Schools sought to use the bursary to widen participation to groups of students who are typically underrepresented in engineering careers, particularly female students, students from minority ethnic groups, and students with disabilities.
- The bursary allowed the purchase of additional kit which enabled more students to take an active part in the design and build of robots, roles that some students tended to be side-lined from when access to kit was limited.
- The bursary also allowed schools to cover travel costs which meant students from lower income households could attend the competition heats.
- Though many schools would still have taken part without the bursary, teachers felt that the bursary enabled the programme to reach more students and offer a better student experience.

The Robotics Challenge

Through the Robotics Challenge, students design, build and code robots to complete a series of challenges, while developing softer skills like research, presentation, teamwork and problem-solving.

The bursary scheme offered £300 to support schools' participation in the Robotics Challenge. In 2021/22, the Challenge was only open to schools who had previously participated in the programme and already had the basic kit required for the activities.

The bursary aimed to support schools to involve more young people from groups under-represented in engineering and to participate in the Challenge heats.

Eligibility criteria

Applications opened in February and bursaries were awarded in March. Heats took place in April-May, so schools needed to start the activity before applying for a bursary.

Bursaries were available to schools that:

- met EngineeringUK's EDI criteria⁴
- had not received a Robotics Challenge bursary the year before

Teachers were asked to say how they would use the bursary in line with the aims of the scheme. 39 schools applied for the bursary in 2022; 35 met the eligibility criteria and were offered a bursary.

Participation in the heats

Schools offered a bursary were encouraged to take part in the heats but this was not a requirement of the bursary. 26 of the 35 schools took part in the Robotics Challenge heats (74%).

Evaluation methodology

Teachers completed a survey in May- June 2022 at or after the heats. Of the 35 schools that were offered a bursary, 19 responded to the bursary survey. Three teachers were interviewed after completing the Robotics Challenge.

⁴ Equality, Diversity and Inclusion criteria, based on student population with higher numbers from groups typically under-represented in engineering. For more detail, see [EngineeringUK EDI criteria - Tomorrow's Engineers](#)

WIDENING PARTICIPATION IN THE ROBOTICS CHALLENGE

When applying, teachers were asked to indicate how they would spend the bursary money in order to achieve the aims of the bursary scheme.

94% of applicants said they would use the bursary to engage more young people from groups underrepresented in engineering.

Among 13 schools who received and spent the bursary, 6 said they used it to buy more kit for the Robotics Challenge, and a further 5 to buy kit that could be used beyond the Robotics Challenge for other school activity (5 teachers).

Some teachers wanted to purchase more kit, particularly to increase the number of female students and students from minority ethnic groups who engaged in the programme.

“We would like to purchase more kits and try to engage more girls into designing and building robots as at present they are more interested in the presentation side of the Challenge.”

“...this year we had over 40 girls sign up for the robotics club but we could only accept 30 (randomly chosen) due to not having enough robots to share around [...] We would look to put the bursary funds towards getting more Lego Robots so even though only 10 girls get to go to the competition, at least we have efficiently supplied all the girls interested with the opportunity to get involved in engineering.”

“Uptake of the competition is still low among girls and those of a BAME background so to experience the equipment as part of usual lessons will hopefully spark an initial interest and encourage uptake of the club but also STEM subjects in further education.”

Other schools aimed to make the activities more accessible for students with additional needs through tailored resources.

“We would like to make robotics a project for SEN pupils and allow them to experience science, computer science and engineering in a more hands on practical manner.”

“Making the challenge accessible to our deaf/disabled students, preparing all the materials to help them get familiar with the instructions, paper worksheets, BSL videos, help through the mini challenges in the Spike App to get ready for the real competition.”

56% of applicants said they would use the bursary to enable students - particularly those who might struggle to pay for travel - to participate in the Robotics Challenge heats. Of those who received the bursary, 4 said they had used the money to the pay for travel to the heats or finals.

“[...] use some of the funding to support transport costs to and from the Robotics Challenge heats, at least provide subsidy for those pupils falling into the lower socio-economic groups or our PEF pupils.”

“We aim to use the bursary money to fund transport to and from competitions to enable young people to access these opportunities regardless of socio-economic group.”

IMPACT OF THE BURSARIES

The bursary aimed to encourage schools to attend heats. Of the 80 schools contacted about the bursary, around half (39) applied and received one. Of these, over two-thirds attended the heats (28 of 39). Of the 41 who did not apply only 5 attended the heats.

This suggests that the bursary was effective in meeting this aim. However, we do not know whether receiving a bursary encouraged schools to participate in the heats, or whether schools were more likely to apply for the bursary if they were already planning to attend the heats.

In the survey, half of teachers (50%) agreed that their school would not have been able to take part without the bursary. This is likely impacted by the timing of the bursaries, as schools would mostly have needed to take part in the programme already, prior to being notified whether they had been awarded a bursary.

Nearly 4 in 5 (78%) teachers agreed that the bursary allowed their school to involve more students from underrepresented backgrounds.

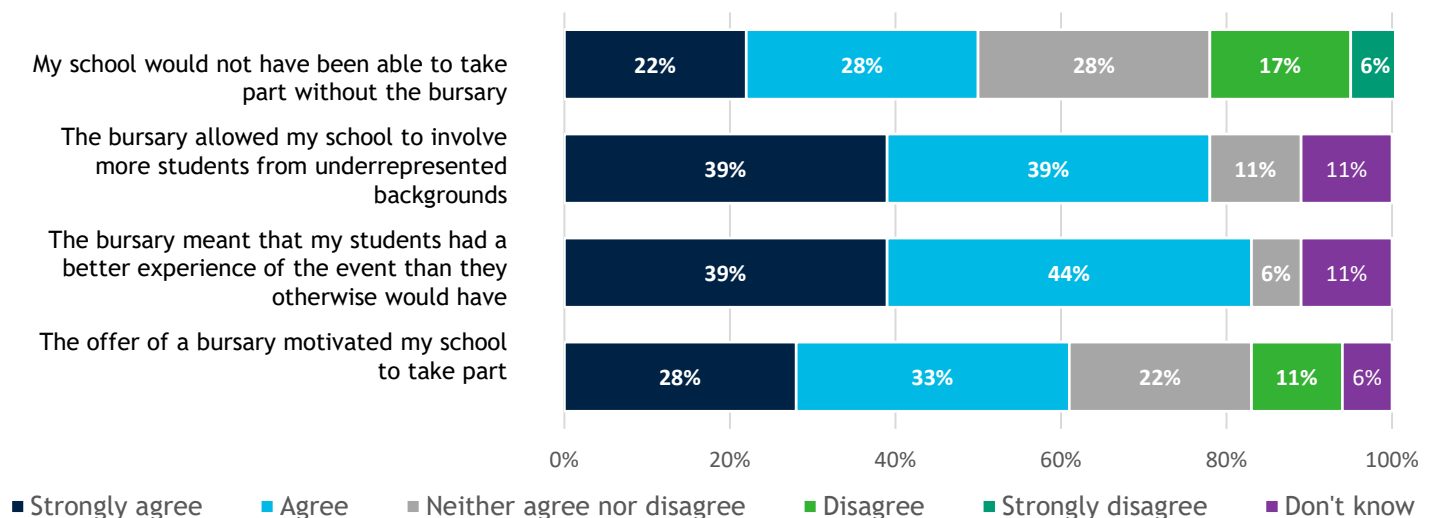
Over 4 in 5 (83%) teachers agreed that the bursary meant their students had a better experience of the Robotics Challenge than they otherwise would have.

Three out of 5 teachers (61%) agreed that the offer of a bursary motivated their school to take part.

"As far as the bursary is concerned, it was the difference between us being able to go and being able to make a good show for ourselves and basically just turning up and bringing the numbers up

...It made a significant impact. Without the bursary we would not have been able to do any of the tasks at all on the day and that is the bottom line."

FIGURE 6 Teacher's views on the impact of the bursary (n=18)



APPENDIX 3:

The Big Bang at School 2021/22 bursary scheme
evaluation

KEY FINDINGS

- The bursary money was largely spent on materials, resources and activities to enhance the Big Bang at School experience.
- Three quarters (76%) of teachers said that the offer of the bursary motivated their school to take part.
- Over 80% of teachers that received a bursary said it meant that their students had a better experience of Big Bang at Schools than they otherwise would have.
- 73% of teachers said that the bursary had enabled them to involve more young people from groups underrepresented in engineering.
- 65% of teachers said that they wouldn't have been able to take part in Big Bang at School without the bursary
- Teachers would like to see better communication and clearer processes for the bursary scheme

In 2021/22 the Big Bang at School programme was exclusively run for schools that meet EngineeringUK's equality, diversity and inclusion criteria, meaning that they have high proportions of students from groups that are underrepresented in Engineering. All schools that took part were offered a bursary. Schools taking part for the first time were offered a bursary of £1000 and repeat schools that had received a bursary the previous year were offered £500.

Aim of the bursary scheme

The bursary was intended to enable schools to make the Big Bang at School experience richer and more engaging for students, and particularly those from groups underrepresented in engineering.

Application process

Teachers completed a short bursary application form before participating in Big Bang at School where they were asked to say what they would use the bursary for, how they would meet the aims of the bursary scheme, and how they would recruit or select students to take part.

All schools that applied and met these criteria⁵ were awarded the bursary. In total, 29 new schools and 23 repeat schools were offered a bursary, of which 24 new schools and 16 repeat schools completed the programme.

The evaluation

Teachers were invited to take part in a feedback survey after participating in Big Bang at School. We received 54 responses by teachers from 20 schools. The findings reported here include teachers from new and repeat schools. Teachers were also invited to participate in a feedback interview following participation. We have interview data from 6 teachers.

⁵ Equality, Diversity and Inclusion criteria, based on student population with higher numbers from groups typically under-represented in engineering. For more detail, see [EngineeringUK EDI criteria - Tomorrow's Engineers](#)

HOW THE BURSARY MONEY WAS USED

Twenty-four teachers identified specific areas of spend for their bursary. The most common spend categories were materials or resources to support Big Bang at School (58%) and digital or in-person activities to enhance the event (54%). One in 4 said they used it to purchase or lease equipment specifically for Big Bang at School and 38% said it had allowed them to buy equipment that they could continue to use after the Big Bang at School event. Only 4 teachers said the bursary was spent on teacher or technician cover.

Nearly 1 in 5 teachers (18%) said that they had not yet spent the bursary money and 27% said that they did not know what the bursary money had been spent on.

IMPACT OF THE BURSARIES

Teachers were asked a series of questions to measure the impact of the bursary.

Among schools that had spent the bursary (n=37), 65% of teachers agreed that their school would not have been able to take part without the bursary.

Nearly three quarters (73%) agreed with that the bursary allowed their school to involve more students from underrepresented backgrounds (only 1 teacher disagreed).

84% of teachers agreed that the bursary improved the experience of the event for students.

Among all schools (including those that did not receive or spend the bursary) three quarters of teachers (76%) agreed that the offer of a bursary motivated their school to take part (only 1 teacher disagreed).

FIGURE 7 What teachers spent the money on (n=34)

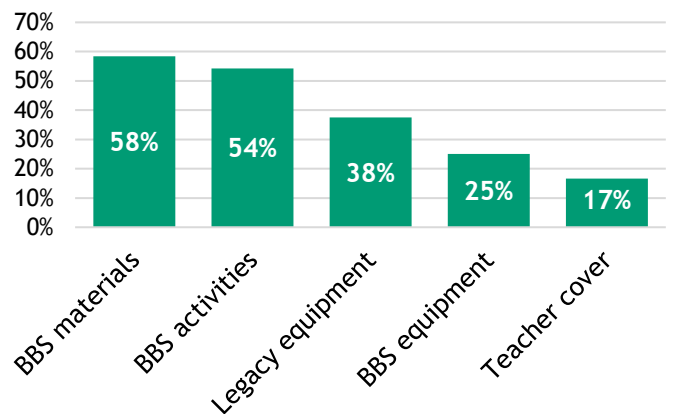
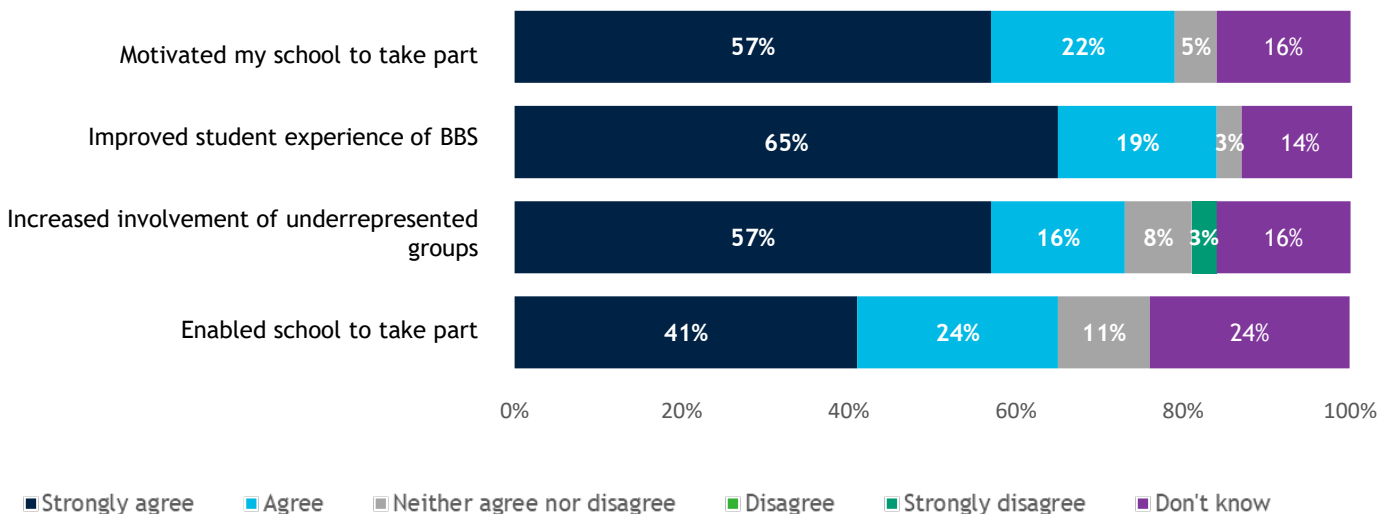


FIGURE 8 Impact of the bursary (n=37)



FEEDBACK FROM TEACHERS

Overall, teachers who received a bursary were very grateful for the money and were pleased to see their students engaged in STEM activities.

In the interviews teachers were asked to provide feedback on the bursary scheme and how it could be improved. The main themes are summarised below:

In addition to the specific areas we asked about in the survey, teachers identified a number of benefits that the bursary had for their schools.

- The bursary allowed them to run the event in their own way without having to worry about costs
 - It enabled a range of experiences for students, particularly meeting other people, which was felt to be important following COVID
 - Getting in external speakers took stress away from planning workshops and organising the event all by themselves
 - They were able to purchase things to make the experience richer (e.g. certificates and prizes for students, external speakers and workshops, provide lunch for volunteers)
- Teachers also identified a number of ways that the bursary scheme could be improved.
- Improve communications with schools about the bursary as some schools weren't aware about the bursary until very late on or weren't sure if they were receiving a bursary or not
 - Make sure all emails to teachers are sent during term times as some teachers were not able to action any requests that were sent during the school holidays.
 - Ensure that the timings of the bursary process work for schools
 - Support teachers with the invoicing process as not all teachers are aware of how invoicing works within their school.
 - Pay schools promptly as one school hadn't received the bursary from the previous year
 - Change the wording of the feedback survey as teachers found it confusing because it asked how they spent the money, which they hadn't yet received
 - Give teachers plenty of time to complete forms as some teachers might miss deadlines because they don't get fixed times to do admin work

APPENDIX 4:

The Big Bang Fair 2021/22 bursary scheme
evaluation

KEY FINDINGS

- Attendance among schools that received a bursary was higher than among similar schools that did not receive a bursary, which may indicate that this encouraged schools to prioritise The Big Bang Fair.
- Teachers identified a range of ways that the bursary would be used to increase uptake among groups underrepresented in engineering careers, including students with disabilities, students in remote locations and students from lower income households.

About The Big Bang Fair travel bursary

The aim of The Big Bang Fair travel bursary was to enable more schools with high proportions of young people from groups underrepresented in STEM to attend The Big Bang Fair.

Schools could apply for a £400 bursary which could be spent on travel to The Big Bang Fair and/or for teacher cover to enable the school to attend.

Applications were open between February and May 2022 and The Fair took place in June 2022.

Eligibility

All schools that met the following criteria were offered the bursary:

- met EngineeringUK’s EDI criteria⁶
- had registered for the Fair

75 schools applied for the travel bursary, out of which 48 were eligible and were offered the bursary.

Attendance at The Big Bang Fair

Schools could apply for the bursary only when they registered for The Fair. We don’t know how many schools were only able to attend if they received the bursary.

However, the bursary may have provided additional incentive for schools to prioritise the trip. Schools that received the travel bursary were more likely to attend The Big Bang Fair, compared to EDI schools who did not receive a bursary (76% compared to 57%).

We cannot be certain that the difference in attendance rate was due to the bursary or other contributing factors, including train strikes during The Fair.

FIGURE 9 Attendance at The Fair

Registration type	Number registered	Number attended	Attendance rate
All school groups that registered for The Big Bang Fair	461	307	67%
All EDI school groups that registered for The Big Bang Fair	265	157	59%
EDI school groups who didn’t apply for a bursary	211	120	57%
EDI school groups offered bursary	50	38	76%

⁶ Equality, Diversity and Inclusion criteria, based on student population with higher numbers from groups typically under-represented in engineering. For more detail, see [EngineeringUK EDI criteria - Tomorrow’s Engineers](#)

USE OF BURSARY

When applying for the bursary, teachers were asked to say how they would spend the bursary money:

- 97% of schools said they would spend it on travel
- 29% of schools said they would use it for teacher or technician cover.

The majority of schools (94%) said they would travel to The Big Bang Fair by coach or minibus.

Teachers were asked to provide more details on how they would use the funds. As schools were travelling to The Fair from across the UK, the overall cost of travel would vary considerably from school to school, and in many cases £400 would not cover the whole cost of transport for all students.

Teachers planned to use the bursary flexibly to ensure that those underrepresented in engineering were more likely to attend and barriers were removed.

Some teachers said that the bursary would **cover travel costs for students who could not otherwise afford to come:**

“We will pay for the coach for the students who cannot afford it. [...] normally our students have to contribute to the cost of coach £20. Bursary will enable us to pay for the students that cannot afford this.”

“Covering travel costs would allow us to bring more of our Pupil Premium students who have a historically low take up on trips that incur costs.”

Others said that the bursary would be used to reduce the travel costs for all students:

“we intend to bring 120 year 8 pupils to The Fair and would like to use the bursary to subsidise the travel cost.”

“We shall use the fund to subsidise the trip cost to reduce the cost to all students including the 30% pupil premium students that attend the school. This makes the trip more accessible to all of our students.”

Some teachers had identified specific **accessibility issues related to disabilities or geographical location** and intended to use the bursary to address these barriers for students from groups underrepresented in engineering:

“Our students all have an EHCP and the majority are from low income families. We plan to use the bursary to cover the costs of the transport to The Fair by hiring a coach to allow more students to attend.”

“As a medical PRU, the majority of our students have conditions such as ASD, Anxiety, Depression etc. We don't want our students to miss out or be at a disadvantage [...] However, since returning to school after lockdown, the anxiety amongst our students is extremely high and sometimes even attending school is an issue. We would love to give our students a chance to travel to The Fair by a coach or mini bus to help ease the anxiety of travelling on public transport. This would massively increase the uptake in numbers going on the trip.”