EngineeringUK

EDI Bursary Evaluation Report

2021

Executive summary: key findings and recommendations for future EDI bursaries.

Introduction and aims

The engineering workforce in the UK lacks diversity, with a number of groups underrepresented in engineering and other STEM careers. EngineeringUK has an ambition to address this problem by inspiring and informing more young people from these under-represented groups through participation in high quality STEM and engineering engagement programmes.

In autumn 2020, EngineeringUK created a set of equality, diversity and inclusion (EDI) criteria to identify schools with larger proportions of students from groups underrepresented in engineering. In the academic year 2020/21, following these EDI criteria, EngineeringUK targeted the promotion of its programmes to schools who met the EDI criteria, referred to in this report as *EDI criteria schools*.

In addition to targeting EDI criteria schools in its programme promotions, EngineeringUK established the EDI bursary scheme for schools that meet the EDI criteria. Bursaries were intended to help EDI schools overcome barriers to participation in EngineeringUK programmes and other activities listed on Neon, an EngineeringUK operated website allowing schools to search for relevant engineering engagement activities.

EDI bursary scheme delivery

Despite the delay and disruption caused to schools by the COVID-19 pandemic, 151 schools received a bursary of £300-£700 between autumn 2020 and summer 2021. Of these, 50 schools completed a STEM engagement programme during the 2020/21 academic year and more will follow in 2021/22.

All schools receiving the bursary met the EngineeringUK EDI criteria. Over half (52%) of the schools have significantly above national average proportions of young people eligible for free school meals. The schools were geographically spread across the UK.

Methodology

Information on schools' intentions for the bursary funds were received at the point of application. Feedback was collected through a teacher survey and focus groups after schools had completed the programme for which they received a bursary. Data on completion of the programmes was also collated.

Use of bursary funds

Schools indicated how they intended to spend the bursary when they applied. The most common intended use was for specialist equipment to support the activity, with the next most common being materials and resources (including general resources, such as printing). Many schools also spent bursary money on high quality engineering and engineering related digital content. A high proportion of schools who received a bursary for Neon provision intended to spend it on paying for the activity itself.

Impact

There is some evidence from the teacher survey that the bursary made it more likely that the school would take part in the programme (with 18% of Robotics schools and 27% of Big Bang at School schools strongly agreeing) or motivated the school to take part (37% of Robotics schools and 27% of Big Bang at School schools). Comments in the focus groups indicated that some **teachers felt that participation in the programme was made possible by the bursary.**

Feedback from teachers after completing activities was positive. Responses showed that **bursaries allowed schools to improve the richness of the experience for students and make it more engaging** (59% of Robotics Challenge and 45% of Big Bang at School teachers strongly agreed the bursary 'meant that my students had a better experience of [the programme] than they otherwise would have').

Teacher feedback also indicated the **bursary made it possible for them to involve more young people from under-represented groups** (41% of Robotics Challenge and 55% of Big Bang at School schools strongly agreed the bursary 'allowed my school to involve more students from under-represented backgrounds').

The evaluation was not able to demonstrate whether the bursary resulted in more young people from under-represented groups participating (due to insufficient demographic data on the young people who participated). However, other evidence available here shows that when EngineeringUK works with EDI criteria schools this resulted in higher numbers of young people from ethnic minority backgrounds and lower income households (indicated by Free School Meal eligibility) participating.

Learning and recommendations
Future evaluations should aim to explore whether the bursary made it more likely that schools start and complete a programme, over and above the targeted communication to all EDI criteria Schools to encourage participation.

Conclusion
The evaluation shows that in the first year of the EDI bursary scheme, the bursaries were well received by teachers. There is evidence that teachers believe the bursary enriched the experience for students and helped reach and engage more students from under-represented groups. Further work is planned for the next year of the scheme to improve the process and explore more definitively how the bursaries work to impact the young people's experience of the programmes, extent to which schools could participate in STEM and engineering engagement programmes and whether the bursaries enabled more young people from groups under-represented in engineering to participate in such programmes.

1. About the equality, diversity and inclusion (EDI) bursary scheme

Diversity in the engineering and STEM (science, technology, engineering and mathematics) workforces is a well-established concern. Women make up just 14.5% of the engineering workforce[1]. Only 37% of Black engineering graduates are working in engineering 6 months after graduation compared to 41% of Asian engineering graduates and 60% be at university than for other of White engineering graduates[2]. People studying for engineering degrees are less likely to be the first in their family to subjects (37% vs 45%) and around 9% of engineering and technology students declared that they have a disability or impairment, as compared with the average of 14%[3].

The EDI bursaries are part of a wider framework[4] of EngineeringUK activities intended to increase the proportions and overall numbers of young people from groups that are currently under-represented in engineering who choose to pursue engineering and other STEM careers. Informal STEM engagement activities can inspire young people to pursue STEM careers and inform them about STEM careers and career pathways that they may not have been aware of. However, young people from these under-represented groups are currently less likely to access informal STEM activities. EngineeringUK programmes encourage participation from schools and young people who may not traditionally access these activities.

In 2020/21 EngineeringUK developed three streams of work in support of its vision that young people from all groups are proportionately present in, and well prepared for, engineering pathways at the age of 19:
1. Development of a set of 'EDI criteria' to identify schools that have higher proportions of young people from groups under-represented in engineering
2. Targeted promotion of EngineeringUK programmes to EDI criteria schools during the academic year 2020/21
3. EDI bursaries offered to EDI criteria schools to help them overcome barriers to participating in one of three EngineeringUK programmes (Robotics Challenge, The Big Bang Competition and Big Bang at School) or in STEM activities promoted on the Neon website.

1.1 EngineeringUK EDI criteria
The EDI criteria were developed in autumn 2020 to identify schools with higher proportions of young people from groups under-represented in engineering. Secondary schools who met one of the following criteria (referred to in this report as *EDI criteria schools*) were considered eligible for the EDI bursary:
- Significantly above national average proportion (defined as top 30% of schools) of minority ethnic students
- Significantly above national average proportion (defined as top 25% of schools) of students eligible for free school meals
- Above national average proportion of minority ethnic students AND above average proportion of students eligible for free school meals
- Special schools
- Rural schools[5]

The full EDI criteria are here.

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[1] Labour Force Survey Quarter 3 2020
[2] Destinations of Leavers from Higher Education (DLHE) 2016/17
[3] HESA student record 2018/19
[4] See EngineeringUK's Impact Framework, available here.
[5] Definition of a rural school varies by UK nation. See full EDI criteria for more detail.

Table 1. Bursary schemes eligibility criteria and application and selection approach

Bursary scheme	Number of schools receiving a bursary	Amount	Eligibility (in addition to meeting EDI criteria)	Promotion and application	Selection approach
Robotics Challenge	66	£300	Schools who had either: a) taken part in Robotics Challenge previously, or b) expressed interest in taking part 2020/21.	Eligible schools were offered the opportunity to apply via an application form.	First-come-first-served basis, plus 6 additional bursaries offered due to other circumstances
The Big Bang Competition (General)	34	£500 per school	All schools in the UK that meet EDI criteria.	EDI bursary promoted alongside The Big Bang Competition. Schools could apply for a bursary via an online form when applying to The Big Bang Competition.	Bursaries randomly allocated to applicant schools
The Big Bang Competition Mentoring	2	£500 per school - £250 from sponsor company, £250 matched by EngineeringUK	All EDI criteria Schools participating in The Big Bang Competition mentoring scheme.	All schools applying for The Big Bang Competition mentoring scheme were allocated a bursary.	
Big Bang at School	17 (25 in total will receive this)	£1,500 per school	All EDI criteria Schools participating in the Big Bang at School.	All EDI criteria schools taking part in Big Bang at School '20/21 programme were allocated a bursary.	
Neon	34	Range £300-700 dependent on which provision and amount applied for.	All schools in the UK who met the EDI criteria.	Applying schools outlined what they intended to spend bursary on and how much they wished to apply for.	EngineeringUK assessment of likely impact against the criteria here.
Local	6 schools (included in the above schemes).	Same amounts as the bursary scheme entered (outlined in above rows).	EDI criteria Schools in Lancashire, Hampshire or Peterborough could apply for any of the above schemes	Directly target EDI criteria schools in these 3 local areas.	All eligible schools who applied in the 3 areas automatically received the bursary.

1.2 Bursary recipients

Table 1 provides a breakdown of bursary criteria and the number of schools receiving bursaries by programme. The schools who received a bursary were all mainstream secondary schools or special educational needs (SEN) schools which were a mixture of secondary and all through schools.

We asked teachers in the focus groups about the processes involved in applying for and receiving a bursary. The teachers generally felt that the application process was easy and there was nothing that needed to be done to make this easier.

1.2.1 Geographical spread

Schools in receipt of the bursary were spread across the UK as shown in table 2 below. Overall regional participation in the bursary scheme ranged from 3% in Northern Ireland to 17% in the North West, however there was variation between programmes. For example, 24% of the Robotics Challenge bursaries were received in the North West and 20% in Scotland. Some regions had no schools in receipt of a bursary for some of the programmes which is unsurprising given the relatively low numbers of schools participating in this first year.

Table 2: Geographical location of schools receiving the EngineeringUK EDI bursary, by programme

Region	Robotics		The Big Bang Competition		Big Bang at School		Neon		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	4	6%	2	6%	1	6%	0	0%	7	5%
East of England	6	9%	5	15%	0	0%	4	12%	15	10%
London	10	15%	6	18%	1	6%	5	15%	22	15%
North East	1	2%	2	6%	0	0%	4	12%	7	5%
North West	16	24%	4	12%	0	0%	5	15%	25	17%
South East	2	3%	0	0%	4	24%	1	3%	7	5%
South West	3	5%	3	9%	2	12%	9	26%	17	11%
West Midlands	4	6%	6	18%	0	0%	3	9%	13	9%
Yorkshire & Humber	5	8%	3	9%	1	6%	1	3%	10	7%
Scotland	13	20%	2	6%	0	0%	1	3%	16	11%
Wales	2	3%	1	3%	4	24%	1	3%	8	5%
Northern Ireland	0	0%	0	0%	4	24%	0	0%	4	3%
Grand total	66	100%	34	100%	17	100%	34	100%	151	100%

1.2.2 Demographics of young people

Schools were considered for a bursary if they met one of the criteria listed in section 1.1. Table 3 shows the breakdown of the qualifying criteria by programme and overall. Around a third of the schools in receipt of a bursary met the criteria for having significantly above average numbers of students in receipt of free school meals. In addition, a further 21% met the criteria due to having significantly higher than average proportions of students eligible for free school meals *and* significantly higher than average ethnic minority students. This means over half (53%) of the schools who received an EDI bursary had significantly above national average proportions of young people eligible for FSM, indicating the bursary reached many schools with a high proportion of economically disadvantaged students.

Table 3: Reason for EDI bursary schools meeting the EDI criteria, by programme

Reason met criteria	Robotics		The Big Bang Competition		Big Bang at School		Neon		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Sig. above avg FSM	22	33%	12	35%	4	24%	10	29%	48	32%
Sig. above avg FSM and Ethnicity	13	20%	8	24%	5	29%	6	18%	32	21%
Sig. above avg Ethnicity	10	15%	7	21%	1	6%	8	24%	26	17%
Special School	7	11%	5	15%	1	6%	7	21%	20	13%
Above avg FSM and Ethnicity	10	15%	2	6%	2	12%	1	3%	15	10%
Rural school	4	6%	0	0%		-	2	6%	6	4%
Top 40 FSM		-		-	4	24%		-	4	3%
Grand Total	66	100%	34	100%	17	100%	34	100%	151	100%

Since not all students within a participating school will actually take part in an activity, this finding does not guarantee an increase in access among students from under-represented groups, and we were not able to collect sufficient demographic data of the young people taking part to test this. Nevertheless, increased participation by these schools does increase the chances of reaching the young people being targeted through our bursaries.

Overall, as a result of prioritising EDI criteria schools in all our programmes, we have seen an increase in participation of young people from groups under-represented in engineering across EngineeringUK programmes overall in 2020/21. Evidence from our Energy Quest and Big Bang Digital programmes during 2020/21 shows more participation among young people from ethnic minority backgrounds and in receipt of free school meals in EDI criteria schools than in schools who did not meet the EDI criteria. This finding would suggest that encouraging more EDI criteria schools to participate in programmes should increase the likelihood of engaging young people from underrepresented groups.

1.3 About the evaluation
The aim of this report is to evaluate the impact of the EDI bursary scheme. The bursaries aim to help schools overcome barriers to involvement in EUK programmes and as this is the first year of the EDI bursary scheme, we want to use it as an opportunity to learn:

- Whether the bursaries impact the EDI schools' participation – both whether they participated and extent of completion of the programmes
- Whether receiving the bursaries impacted the type of young people who participated
- The impact of the bursary on the experience of the programme for the young people
- How the bursary had an impact – including barriers it helped overcome

In order to evaluate the bursary scheme, we have looked at the data collected about the schools at the time of registration and throughout the programmes and also carried out some focus groups with the teachers who received a bursary from the scheme. Data was collated at the end of the academic year 2020/21 for schools who applied for the bursary, including whether they were successful in their application and if they started and completed the programme for which

they received the bursary.

Teachers completed a survey after having completed the programme for which they received funds – this included questions on how much they agree with a number of statements about taking part in the programmes and the students they were able to reach.

Teachers who received a bursary from EngineeringUK were invited to take part in a one-hour focus group in July or September 2021 to discuss their experience alongside other teachers who had also received the bursary. This included questions on the application process, motivation to apply, the difference the bursary made to the school, challenges they faced and improvements that could be made.

Two focus groups took place. For Robotics Challenge there were six participants in the focus group on the day, and for Big Bang at School there were five participants. There was not sufficient response to run a focus group from teachers that had received a bursary for The Big Bang Competition or Neon.

The meetings took place virtually using the Microsoft Teams platform and were facilitated by the research officer and senior research analyst at EngineeringUK. Teachers were provided with information about how the details of the discussion would be used and were required to consent prior to joining the meeting for their views to be included in reporting. A £25 Amazon voucher was also provided as an incentive for teachers to participate in the focus groups.

2. Bursary schools' participation in STEM and engineering programmes

In this section we tabulate the numbers of school who applied for bursaries within each of the EngineeringUK programmes for which they were available, and how many bursaries were awarded. We then explore how many of the schools who were successful in their application then went on to start and complete each of the programmes.

2.1 Context of delivery

The context of delivery is important in understanding these findings. 2020/21 was a particularly challenging academic year for schools and young people, with full and partial closure of schools caused by the COVID-19 pandemic. Even when students were in school, their ability to engage in STEM enrichment activities and STEM clubs was often limited due to curriculum pressures and issues with social distancing and equipment sharing.

The COVID-19 pandemic has disproportionately impacted young people from lower socioeconomic backgrounds and other groups under-represented in engineering. Schools and young people with fewer resources have particularly struggled to adapt to the restrictions caused by the pandemic. Opportunities to support schools and young people facing these additional barriers are therefore even more important, including in opportunities for STEM engagement. Any impact of these bursaries may, therefore, be of even greater importance within this context.

2.2 Schools' awareness and motivation for applying the bursary

We asked teachers participating in the focus groups where they had heard about the scheme and their reasons for applying. These questions were intended to help us understand the best avenues to publicise the bursary scheme to be more inclusive and engage with more schools.

There were a range of ways the teachers had heard about the scheme:
- The Tomorrow's Engineers website

- Receiving the Neon newsletter
- Via emails from colleagues
- Being told about it at an event
- Having taken part in programmes previously

Focus group feedback suggested that more effective advertising of the bursary scheme could improve awareness. All focus group participants said that they found out about the bursary through a secondary person and would not know where to look to find out about it again. They also suggested that launching the scheme earlier in the academic year would be helpful, along with further clarification on timelines for when and where to apply and the process. The most popular suggestion was to receive an email alert.

Reasons given for applying to the scheme fall into two broad categories: a) motivations for accessing STEM engagement, and b) overcoming barriers. We discuss the barriers in more detail in the next section of this report.

Reasons for accessing STEM engagement activities

- To show young people new careers and get them interested in STEM
- To show young people different aspects of STEM they could learn about beyond classroom-based subjects (i.e. english, maths, science)
- To encourage girls to engage with STEM
- To purchase more robotics kits to be able to get more young people involved and actively engaged in hands on activities
- For a new challenge
- To allow students to have access to activities that they wouldn't normally have
- To allow them to widen scope of things they could do in a Big Bang at School week
- Teachers themselves were interested in engineering, considering it a very employable job and wanting students to see the options available to them
- To develop the school STEM programme and get higher intake
- To scale up STEM activities offered in schools

2.3 Schools awarded the bursary

In total, 309 schools applied for one of the available EngineeringUK bursaries during the period November 2020 to May 2021 and 151 (49%) were successful in their application (see table 4).

Table 4. Applications for the EngineeringUK bursary scheme 2021, by programme

Programme name	No. of schools that applied for the bursary	Schools awarded the bursary	
		No. of schools	% of applicants
Robotics Challenge	94	66	70%
The Big Bang Competition	103	34	33%
Big Bang at School*	25	25	100%
Neon	87	34	39%
TOTAL	309	151	49%

*All 25 schools were awarded and will receive the bursary, but so far only 17 of the 25 schools have been paid due to issues such as delays in schools invoicing EngineeringUK.

Many of the schools are still in the process of delivering the programme for which they received funds. For some of the programmes EngineeringUK distributed funds later in 2020/21 academic year and there were differences in programme completion as shown in table 5. Please note that for some schools there was no data available on whether they had ycompleted so the true numbers may be slightly higher.

Table 5. Start and completion of programmes for schools who received the bursary

Programme name	Schools in receipt of bursary money that started the programme		Schools in receipt of bursary money that completed the programme	
	No.	%*	No.	%*
Robotics Challenge	55	83%	24	36%
Robotics Challenge – partial completion	55	83%	50**	76%**
The Big Bang Competition	7	21%	7	21%
Big Bang at School	13	76%	13	76%
Neon	31	91%	6	18%

*Number as a percentage of those in receipt of bursary money
** this is the Robotics Challenge schools in which the teachers completed CPD to prepare for programme delivery but the students did not participate in the programme (there may be opportunities for them to do so in 2021/22).

Completion rates have been affected by delays in delivery of some programmes due to Covid-19:

Robotics Challenge – the scheme has completed delivery. For a high proportion of schools, teachers completed training/CPD, and a lower proportion of schools also submitted evidence to the Robotics Challenge i.e. completed the programme in full. Rates of completion likely to have been lower due to issues around COVID-19.

The Big Bang Competition – the bursaries were offered to schools just as The Big Bang Competition was opening for applications and in a proportion of cases schools did not receive confirmation until the Competition was open for entries – the schools who did not complete in 2020/21 are being encouraged to enter in 2021/22.

Neon – the Neon scheme was offered in 3 rounds, with schools being offered funds between April 2021 and June 2021. As of July 2021, 6 schools had completed Neon activities. More are expected to complete activities during the academic year 2021/22.

3. Use and impact of the bursaries for schools

3.1 Use of bursary funds

Information about the use of bursaries was obtained through the application process and reflects the intended use of funds. A breakdown of responses is given in table 6.

Table 6 How schools intended to spend the bursary (indicated by schools at application stage)

Combined	Neon	Robotics Challenge	The Big Bang Competition	Total
Hiring or buying specialist equipment to support or complement the activity (this may include software)	17	7	23	47
SPIKE Prime Robots		42		42
Resources and materials to support the young people to participate in the activity or project (may include general consumables and equipment).	22	7	32	61
Paying for provision (Neon experiences)	21			21
To overcome digital poverty through purchase of digital devices or data.	12	2	11	25
Teacher or technician cover costs.	10	2	5	17
Content	Many schools participating in Big Bang at School spent on this.			

NB: schools could select more than one category they intended to spend on.

When taken together, the most common spend was on specialist equipment, including SPIKE Prime Robots, to enable STEM engagement activities to take place or to enhance them. This was followed by funding to cover more general costs of the activities, including printing, photocopying, non-specialist equipment, etc.

In the focus groups, participants suggested that more information and guidance could help schools to understand what they could most usefully spend the bursary money on to enhance activities. This includes clearer communication on when schools can expect to receive money once they are successful in being granted the bursary. For Robotics Challenge schools, ensuring teachers receive the funds in time to purchase necessary kit would help to ensure that funds can be put to best use.

Teachers appreciated the flexibility in having the freedom to decide how to use the bursary funds. However, they also mentioned that having additional guidance on what the money could be used for would be helpful, especially for those with less experience in running these events. Among the suggestions made were having additional resources or sessions to show schools how to take the programme to the next level, advice on the best kit to purchase and a teacher forum for schools receiving the bursary so that they can share ideas, problems and solutions with each other.

Some additional spending options were suggested, including being able to invite a visitor to inspire students or show them what to do.

3.2 Impact of bursary spending

Teachers were invited to take part in a survey following their participation in an EngineeringUK programme. Bursary recipient schools were asked to tell us about any impact of the bursary for their school's participation. The responses are shown in figure 1. Responses show that teachers were most likely to feel that the bursary enhanced the experience or that it allowed them to extend the activity to more students. Slightly fewer felt that the bursary was an incentive to take part, or that it enabled the school to take part when it would not otherwise have been able to.

In this section we look in more depth at impact in three areas:
   a) Overcoming barriers for schools to take part in STEM engagement activities
   b) Enhancing the experience for students, and
   c) Widening engagement of students, particularly those from under-represented groups.

Figure 1: Opinions of the programme experience from teachers in schools in receipt of a bursary, by programme

% of schools that responded to survey

■ strongly agree
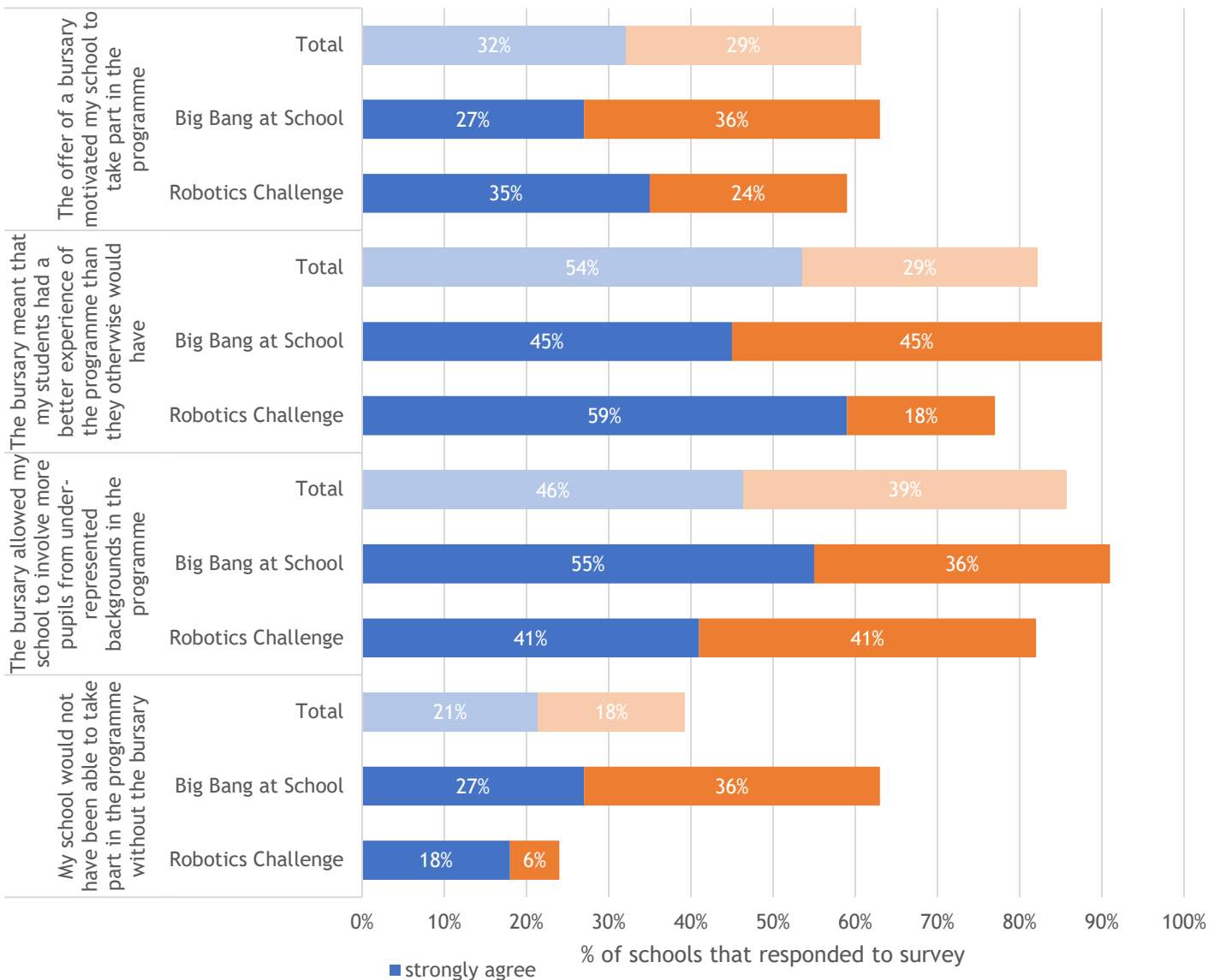
3.2.1 Overcoming barriers to schools' participation in STEM engagement

> "At my school it [bursary] helped with the fact that we didn't have any equipment, and also there was no way we could afford the equipment…to be completely honest this activity would not be run if it was not for your bursary."
>
> "The bursary was really instrumental in allowing the Robotics to happen. It would have been an experience that the students would not have had, because it is about expense and it is about affordability…and state schools cannot afford that [equipment] because they get so expensive."

Over a third of recipient schools agreed (18% strongly agreed) that their school would not have been able to take part in the programme without the bursary. This was higher among schools participating in the Big Bang at School programme than the Robotics Challenge programme.

Discussions from the teacher focus groups allowed us to look at what barriers are faced by schools and how the bursaries helped the teachers to overcome some of these. Overwhelmingly, teachers who participated in the focus group were very positive about receiving the bursary and how it helped them to overcome challenges that they ordinarily face in school which were mostly related to funding.

Covering costs of delivery
The second most common use for bursary funds was resources and materials to support the young people to participate in the programme and these could be general such as printing – 60 schools indicated they would spend on this (Table 6.). Some focus group schools said they used the money to cover shortfall in costs of the activity, for example to cover the cost of photocopying.

Purchasing externally provided activities
A high proportion of those who received a bursary to participate in experiences listed on Neon used the bursary to pay for the experience.

3.2.2 Impact of the EDI bursaries on experience of schools and young people

> "We applied to allow our students to have access to things that they maybe wouldn't normally have because we have such a tight budget at school. A lot of times that does determine what activities we can carry out. So [the bursary] kind of allows us to widen the scope of things that we can do during a Big Bang week and not be as limited as we would have been"

83% of recipients who responded to the survey agreed (29% strongly agreed) that the bursary allowed them to improve the quality of the experience for students. Since STEM engagement activities are effective through inspiring and informing, the quality of experience, and particularly the ability to engage in fun and interactive activities is critical.

Purchasing specialist equipment
Data on intended use (table 6) shows that the most common intended use of the bursary was for

schools to obtain specialist equipment which in many cases helped enable or enhance the activity. Forty-seven schools indicated they would hire or buy specialist equipment to support the activity and 42 schools requested to receive a SPIKE Prime robot. Focus group schools also highlighted the use of funds to contribute towards covering the cost of equipment alongside other funding streams, as their school would not be able to cover any costs.

> "It won't just have made a difference this year, for me, it'll make a difference for future years because I can now run this activity again and again, even if we don't get into the programme next year…we still have all the equipment and I can just run this one in house again and again"

Widening the scope of the activity
Many of those that received a bursary to participate in the Big Bang at School programme spent this on high quality digital content to enhance the experience. The bursary enabled some schools to run more hands-on activities, making the day more fun, and not necessarily linked to the curriculum, to inspire and excite students. This was felt to be particularly important after periods of home learning where students had missed out on more interactive learning opportunities.

3.2.3 Widening participation within the school

> "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"

85% of recipients who responded to the survey agreed (39% strongly agreed) that the bursary allowed more students from under-represented groups to be involved in the programme.

In some schools they were "able to involve every student" either by collapsing the timetable for one day or running the Big Bang at School. This allowed young people to have access to workshops and activities that they wouldn't otherwise have. In these cases, the bursary was instrumental in being able to scale up activities with everyone.

It is understood that many of the schools who requested a SPIKE Prime robot did so in order to involve more young people in the activity and this was also reflected in the focus group feedback.

4. Discussion

The bursaries distributed this year appear to have had most impact through enabling schools to purchase or receive specialist equipment to support the activity, which seems to have added richness to the experience of students or allowed wider participation across the school. In some cases, it may also leave a lasting impact beyond these programmes as equipment, along with the skills gained through the programme, could allow further STEM activities in the school. It seems that a relatively low number of schools spent on teacher cover or to overcome digital poverty.

4.1 Impact of bursaries on school participation

Data from feedback provided by teachers in the survey indicates that the bursary had less impact on whether or not the schools took part in the programme (18% of recipients for Robotics Challenge and 27% of recipients for Big Bang at School strongly agreed that they would not have been able to take part without the bursary) than the richness of the experience and the extent to which they were able to involve more students from under-represented groups (which is discussed below). However, there is some indication from comments in **both** the focus groups that some teachers felt the school would not have had the funds to take part if it were not for the bursary.

Future evaluations of the bursary scheme should explore more definitively whether the bursaries impacted school participation.

4.2 Impact of bursaries on young people's participation.

The student population of EDI schools means that their participation should result in a higher likelihood that young people from groups under-represented in engineering take part in the STEM engagement activity. Anything that increases participation of EDI criteria schools, such as this bursary scheme, should therefore increase participation of young people from these groups.

Teacher survey feedback suggests that within participating schools the bursary allowed more students from under-represented backgrounds to be involved (41% of recipients for Robotics Challenge and 55% of recipients for Big bang at School strongly agreed that the bursary 'allowed my school to involve more students from under-represented backgrounds'). Future evaluations should further explore how schools expand participation for different programmes.

4.3 Impact of bursaries on young people's experience of the programme

Teachers viewed the quality of experience of the programme for young people as the strongest impact of the bursaries (59% of recipients for Robotics Challenge and 45% of recipients for Big Bang at School strongly agreed that the bursary 'meant that my students had a better experience of [the programme] than they otherwise would have').

Comments from the focus groups indicated the richer experience that the bursaries enabled made the programme particularly engaging for the young people from under-represented groups. It seems that in many cases the bursary allowed schools to enrich the experience by purchasing engaging and fun content, which deepened the experience for students – this is based on both focus group feedback and the information about how the bursary was spent.

4.4 Local bursary scheme

As part of this first year of delivery, EngineeringUK trialled targeting bursaries to 3 local authority areas. Bursaries were automatically given to any schools who applied from those 3 local areas. There was some uptake in these areas, with 6 schools receiving a bursary. However, promotion to schools in these areas was not started until quite close to the deadline of some of the schemes and relatively late in the academic year. There would be value in further exploring this approach in future delivery of the bursary scheme.

5. Learning and recommendations

The evaluation of the first year of bursaries has allowed us to begin to explore how schools can use bursaries to support engagement in STEM activities. The context of school closures and disruption has made it difficult to assess the impact on participation overall.

The focus of future evaluations will be to explore whether the bursary made it more likely that schools could start and complete a programme, over and above targeted communication to encourage them to do so. Future evaluations should also focus on exploring in more depth the three areas of impact outlined in this report: enabling school participation, improving the quality of the experience and widening participation of students from under-represented groups.

In order to do this, better data collection is needed at the point of application for the bursary, including demographics of students who will take part so that we can better evaluate the impact. Furthermore, in order to compare the experience of teachers in receipt of the bursary with schools that do not, all teachers should be encouraged to complete a follow-up survey on completion of the programmes.

Focus group discussions highlighted recommendations for improvements and development of the scheme. The following could be considered for future iterations:
- Better advertising of the bursary scheme
- Earlier launch of the scheme in the academic year
- Clarifications on timelines on when and where to apply and the process, potentially through an email alert
- Clearer communication on when schools will receive money once successful in being granted the bursary
- Teachers appreciated the freedom to decide how to use the bursary funds. However, they also mentioned that having additional guidance on what the money could be used for would be helpful, especially for those with less experience in running these events
- Being able to invite a visitor to inspire them/show them what to do
- Additional resources/ sessions for how to take it to the next level
- A teacher forum for those who have received a bursary so that they are able to share ideas, problems and solutions with each other
- For Robotics Challenge a shorter time between the training of teachers and the arrival of the kit so the training can be put to best use, ensuring teachers receive the funds on time to be able to purchase necessary kit
- Advice on what would be the best kit to purchase with the bursary money/someone to discuss their needs and find out which kit would be most beneficial

Conclusion

The evaluation shows that in the first year of the EDI bursary scheme, the bursaries were very well received by teachers. There is evidence that teachers believe the bursary enriched the experience for students and helped reach and engage more students from under-represented groups. Further work can be done in the next year of the scheme to improve the process and explore more definitively whether the bursaries impacted the extent to which schools could participate in STEM and engineering engagement programmes, how this impact occurred and whether the bursaries enabled more young people from groups under-represented in engineering to participate in such programmes.