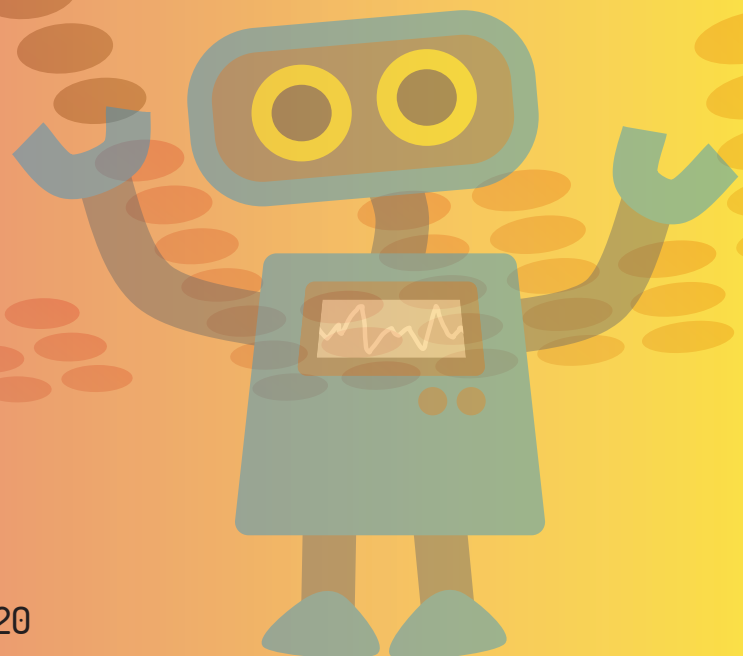


What I liked best was making
the Sprite move



Interim Report Children's STEM Survey Year 1

Scottish Out of School Care Network
March 2019



What I liked best was making the Sprite move

Interim Report
Children's STEM Survey Year 1
Scottish Out of School Care Network
March 2019

About the Scottish Out of School Care Network (SOSCN)

The Scottish Out of School Care Network (SOSCN) is the national intermediary charitable organisation supporting the out of school care sector in Scotland. SOSCN is a Company Limited by guarantee and is a Scottish registered charity (SC020520).

SOSCN provides support, mentoring, training, information and resources to all childcare services providing play, care and learning opportunities for school-age children in Scotland.

web: soscn.org | twitter: @soscn

Report Author: Irene Audain MBE MA (Hons) MEd, Adv Dip

© 2019 Scottish Out of School Care Network

Report Design: Finlay Wright

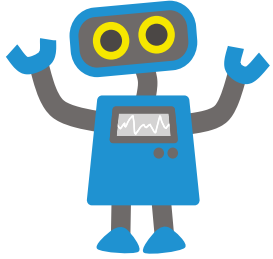


Funded by the Scottish
Government Children, Young
People and Families Early
intervention Project Fund



What I liked best was making the Sprite move

Interim Report
Children's STEM Survey Year 1
Scottish Out of School Care Network
March 2019



“What I liked best was making the Sprite move”
Interim report: Children's STEM Survey – Year 1



1 Summary Results

The results of this participatory quantitative research with children, demonstrates the positive impact of providing STEM in out of school care, in terms of addressing the attainment and gender gaps in STEM, and engaging more girls and older children in new STEM activities. Children's understanding and confidence in STEM increased, including in sharing skills, and the project inspired interest to go on doing more STEM activities and clearly led to new skills in STEM for the majority of children and staff taking part.

1. Providing STEM activities in out of school care helped address the attainment gap in STEM.

Of the 70 students registered across all STEM courses in year 1 and 2, 64% worked in services located in Deciles 5 or lower in terms of the Scottish Index of Multiple Deprivation (Deciles 1-10 with 1=most deprived area to 10 least deprived). 81% of all registered students in year 1 and 2 were female and 19% male, this is higher than the proportion of men in out of school care at around 10%.

2. Providing STEM activities in out of school care addressed the gender gap in STEM.

Of 433 responses, 222 were female and 211 male. Given that 51% females and 49% males took part in the STEM activities, and this survey, providing STEM activities in out of school care led to more engagement of girls, and indeed, engaged mainly female staff (81%) in the training provided.

3. Providing STEM activities in out of school care engaged more older children in STEM activities.

Overall, the majority (24%) of children who took part are aged 8, or 22% aged 10. Whilst some 11 to 13 year olds also took part, the overall age range was 4 to 13, but 330 children were age 8 or older.

What I liked best was making the Sprite move

4. Providing STEM activities in out of school care increased children's understanding of what STEM is.

For the survey statement "I know what STEM means", there is a significant shift from 62% of all children before the STEM activity to 84% after the activity, agreeing with this statement. For girls, this was a higher shift from 60% to 85%, although the boys also gained, moving from 65% to 84% in agreeing with the statement.

5. Providing STEM activities in out of school care increased children's confidence in doing STEM activities.

Overall children's reported confidence in their ability to do STEM activities increased from 70% pre-activity to 83% post-activity. This was slightly higher for girls (85%) than boys (82%).

6. Providing STEM activities in out of school care increased children's confidence in sharing STEM activities.

There was a significant shift after the STEM activity from 56% to 72% of all children in being confident in showing others the STEM activities they have learned. For girls, this went from 59% to 73%, and for boys, from 56% to 71%.

7. Providing STEM activities in out of school care increased children's interest in doing more in STEM activities.

Overall, 91% of children taking part agreed that they want to do more STEM activities, with 93% of boys and 89% of girls agreeing with this statement.

8. Providing STEM activities in out of school care increased children's skills in STEM activities.

Overall, 83% of children agreed with the statement that they have gained new skills doing the STEM activities; significantly this goes up to 89% of girls taking part compared to 83% of boys.



What I liked best was making the Sprite move

2 Brief Introduction and Background

This interim report demonstrates the results of delivering playful and creative STEM activities to children in out of school care services in terms of improving their understanding, skills and confidence in STEM activities.

2.1 What does STEM stand for?

STEM stands for Science, Technology, Engineering and Maths.



2.2 Brief project background

Recent literature from Tanner et al (2016), on how out of school care activities help close the attainment gap, alongside many reports on successful STEM projects in the USA reported by the Afterschool Alliance (e.g. AA, 2018), as well as consultation and reports relating to the gender gap in STEM (National Advisory Council on Women and Girls, 2018) and the STEM Strategy for Scotland (2017), helped develop interesting research questions to be addressed within the delivery of a potential pilot STEM project for out of school care.

SOSCN's own work on older children in past research (SOSCN, 2005, 2006) in terms of their need for more interesting and challenging activities, and in looking at the contents of training and qualifications (Audain and Shoolbread, 2015) also saw that there may be a STEM training gap for the mainly female staff in out of school care, (a separate forthcoming final report will summarise the literature in more detail).

The Scottish Out of School Care Network (SOSCN) applied for a grant from the Scottish Government Children, Young People and Families Early Intervention Project Fund in 2016 for work to be done over a two year period from April 2017 to March 2019.

The grant was used to pilot the development and delivery of STEM training for staff in out of school care, in partnership with two Further Education Colleges, Glasgow Clyde College, which provided a varied STEM science syllabus over one twelve week course, and West College Scotland, with Dr Amanda Ford as course designer, with SOSCN, for a Creative Computing course.

This ran twice, a ten week evening class at West College Scotland, and a 4 all-day Saturday course in SOSCN (then) Glasgow city centre training room. (See appendix for sample training brochures). For year two the West College Scotland course was run 3 times, two 10-week courses at the College, and four intensive all day Saturday courses in Aberdeen. Results are still to come in from these 2018 to 2019 courses.

What I liked best was making the Sprite move

Staff on the courses learned how to deliver playful activities for children to gain increased understanding, skills and confidence in STEM. In particular, the aim was to help address the gender gap in STEM by engaging female staff and girls, and to recruit as much as possible from services in less well-off areas in terms of addressing the attainment gap for children. Following the research findings, the activities were to be designed and mainly targeted at children aged 8 or over.

For the West College Scotland course, students had a kit bag of creative computing materials, including the Raspberry Pi, Makey Makey and in year one, Microbit, and related equipment. Kit bags were provided by SOSCN for the Glasgow Clyde course and they provided various kit materials to fill this for their students. Overall 70 students registered across all the courses.

Staff also learned how to do a simple quantitative SOSCN research survey with children, with guidance provided by SOSCN on ethics, children's rights and choices, parental and child consent. Paper copies of the survey and all supporting materials provided where needed (Appendix children's survey materials).

3 Development of Children's Research Questions, Method and Ethics

The children's research questions were designed to cover their knowledge, confidence and skills in STEM before and after taking part in a STEM playful learning activity.

Would providing STEM activities in out of school care clubs:

1. Help address the attainment gap in STEM?
2. Address the Gender Gap in STEM?
3. Engage older children more in STEM activities?
4. Increase understanding of what STEM is?
5. Increase children's confidence in carrying out STEM activities?
6. Increase children's confidence in sharing STEM skills with others?
7. Encourage children to do further STEM Activities?
8. Result in learning new skills in STEM?

This was participatory action research with children via paper quantitative and qualitative questionnaires, delivered by staff trained as students on the courses designed by the FE colleges and SOSCN.

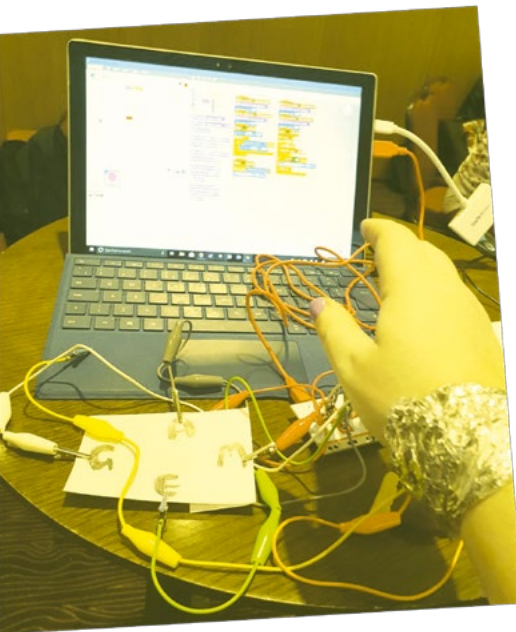
Children were encouraged to give themselves an anonymous name, and to tell us their age and gender. Both age and gender are important variables here given that we are seeking to address the STEM gender gap and to provide more interesting activities for older children.

Children participating were asked to answer questions before and after each STEM activity, this was to measure how the STEM activity made a difference, if any, to their knowledge, skills and confidence. They were asked to agree or disagree with short statements, with options of Yes, No and Maybe. (See Appendix 1 for copy of children's survey information, questions and guidance).

Participation was entirely voluntary and permission and ethical considerations were covered. Students were given guidance on ethics around consulting children and ensuring parental permission. They were also asked to display the SOSCN ethical guidance for children.

What I liked best was making the Sprite move

Given that the quantitative surveys needed to be filled in at a time close to children actually doing the STEM activities, and be easy for children to understand and use, there needed to be a limit on the overall number of questions, it needed to be in a paper format, child friendly and with one or two pages at most. Five questions which were roughly the same for before and after the activity were devised, with a further two post activity only questions.



Dr Amanda Ford tested the first SOSCN draft survey with children in her code club and their feedback was used in terms of simpler language for the statements.

In addition, children were given a qualitative learning log where they could write or draw to finish 2 statements about a STEM activity, in terms of what they liked best and what they learned.

One set of pre- and post-activity questions on the survey form (Q4 on both pre- and post-activity survey form) has not been analysed here as it became clear that children were confused by these statements. Half way through the year, statements for Q4 were changed, but this was too late for most students using the original survey pack. Therefore Q4 will be amended and included in year 2 forthcoming results only.

The results set out here also do not include the data from the children's learning logs, of which there were fewer returns, therefore learning logs for year 1 and 2 will be analysed together for more robust numbers at the end of year 2.

Completed surveys were analysed by inputting the data into <https://freeonlinesurveys.com> for charts and data collation and then on excel for tables and further analysis.

433 individual surveys were collated, although one had no further data than age and gender. Most children answered all of the pre-activity and post-activity questions, with the overall total not going below 429 for any question.

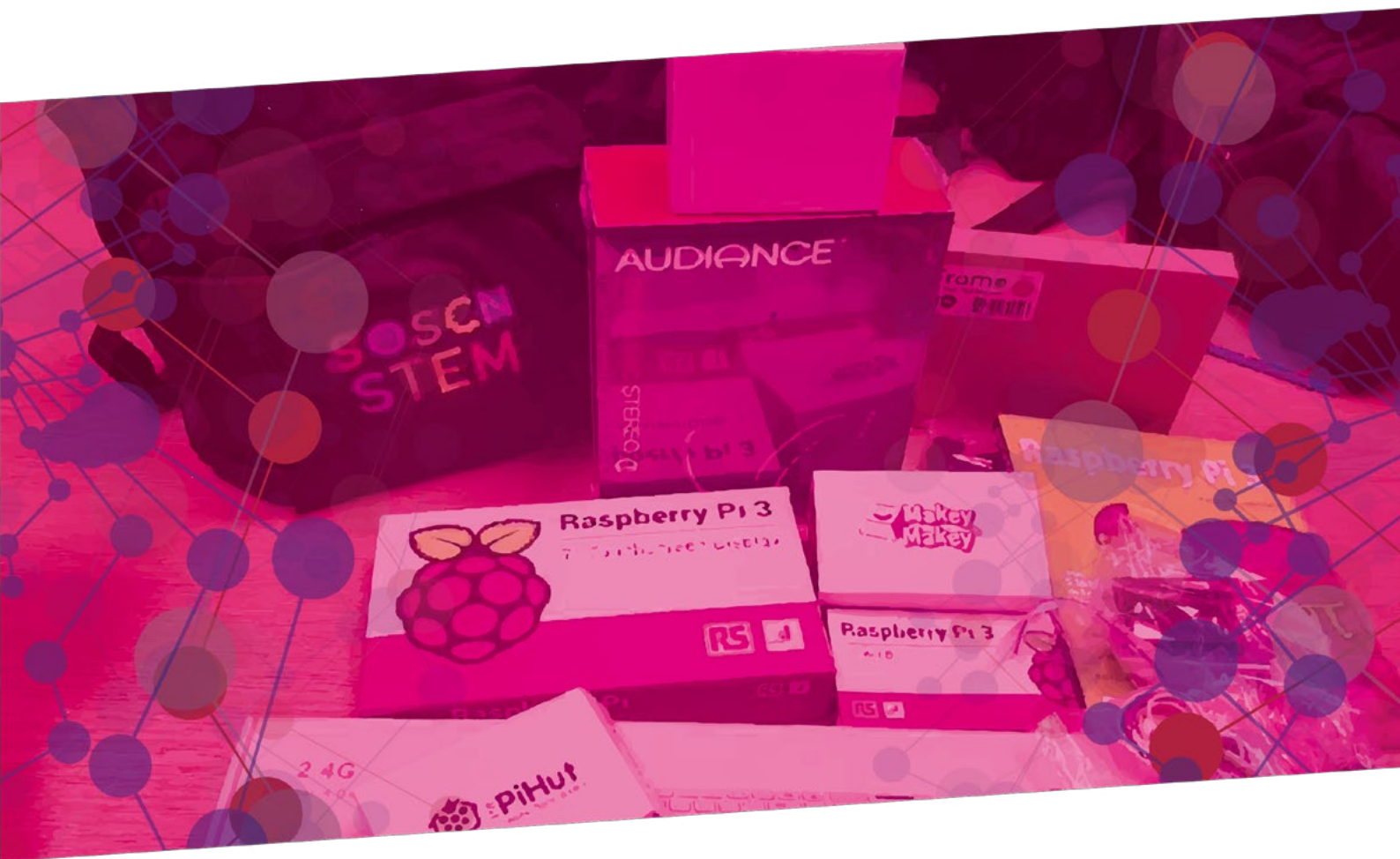
As part of their course work, students also pulled together some case studies, photographs and short films of activities, and for the West of Scotland Creative Computing course, a closed Facebook discussion forum was set up for the SOSCN STEM Champions. Further information from this work will form part of the overall project report, once the courses finish and all data is collected.



What I liked best was making the Sprite move

In terms of addressing the attainment gap, all three courses in year one were accessible to students working in services in Glasgow and the West of Scotland (although one keen student travelled to the evening course from the Lothians area). All students had to apply for the course and, had there been waiting lists and choice of students, priority would be given to those working in the most disadvantaged areas.

While all three courses eventually filled up, there were not enough applicants to make such choices. A postcode analysis using the Scottish Index of Multiple Deprivation data and deciles was used in terms of the service locations of all students who registered on the course. This showed that 64% of students worked in services on decile 5 or lower, with decile 1 being the most deprived, and 10 the least.



What I liked best was making the Sprite move

4 Results of Quantitative Survey Responses from Children Participating in STEM activities

Chart 1 Age and gender of range of children participating in STEM activities

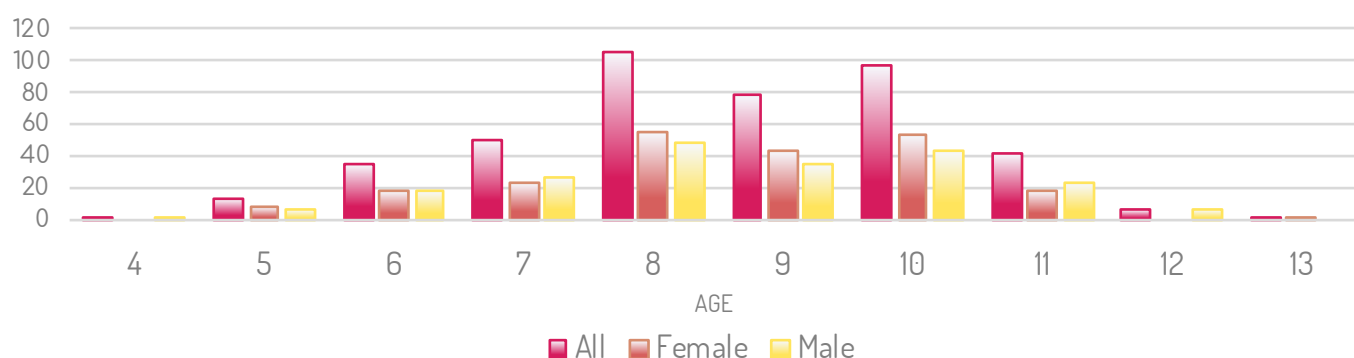


Table 1 Age and gender of range of children participating in STEM activities

Age	All		Female		Male
4	1	<1%	0		1
5	14	3%	8		6
6	36	8%	18		18
7	51	12%	24		27
8	105	24%	56		49
9	79	18%	43		36
10	97	22%	53		44
11	42	10%	18		24
12	6	1%	0		6
13	2	<1%	2		0
All	433		222		211

- Of 433 responses, 222 were female and 211 male, with overall the majority aged 8 (24%) or aged 10 (22%).
- There is little difference for females in terms of the age range, with 25% aged 8 and 24% aged 10, and for males, 23% aged 8 and 21% aged 10.
- The only ages where more boys than girls took part were at age 7, 13% boys compared to 11% girls, and age 11, with 11% boys and 8% girls. This is not statistically significant, given the lower numbers in those age ranges.
- The significant figure is the fact that slightly more females (51%) than male (49%) took part, thus meeting one of the main aims of this project to address the gender gap in STEM.

What I liked best was making the Sprite move

Chart 2 Q1 I know what STEM means pre-activity

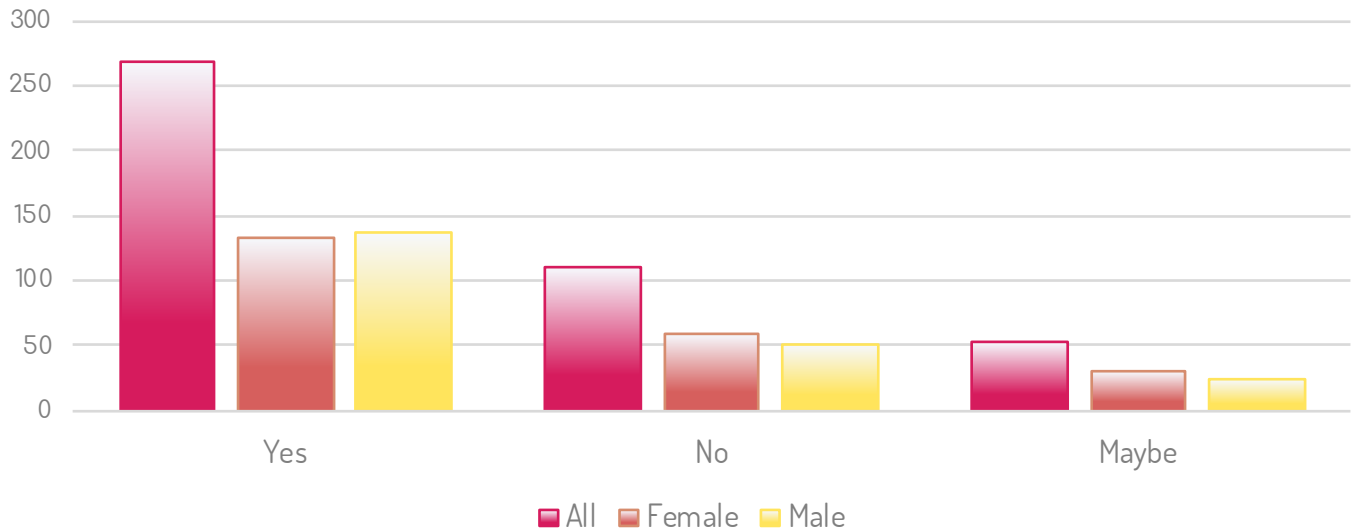


Table 2 Q1 I know what STEM means pre-activity

	Yes	No	Maybe	Standard Deviation	Total Number
All	269 (62%)	110 (25%)	53 (12%)	91.4	432
Female	133 (60%)	59 (27%)	30 (14%)	43.37	222
Male	136 (65%)	51 (24%)	23 (11%)	48.05	210

- Overall 62% of children taking part said they already knew what STEM means; there is a difference between girls and boy's responses in that more boys, (65%) agreed, than girls (60%).
- A quarter overall did not know what it means, and this is slightly higher for girls, 27%, than boys, 24%.

What I liked best was making the Sprite move

Chart 3 Q1 I know what STEM means post-activity

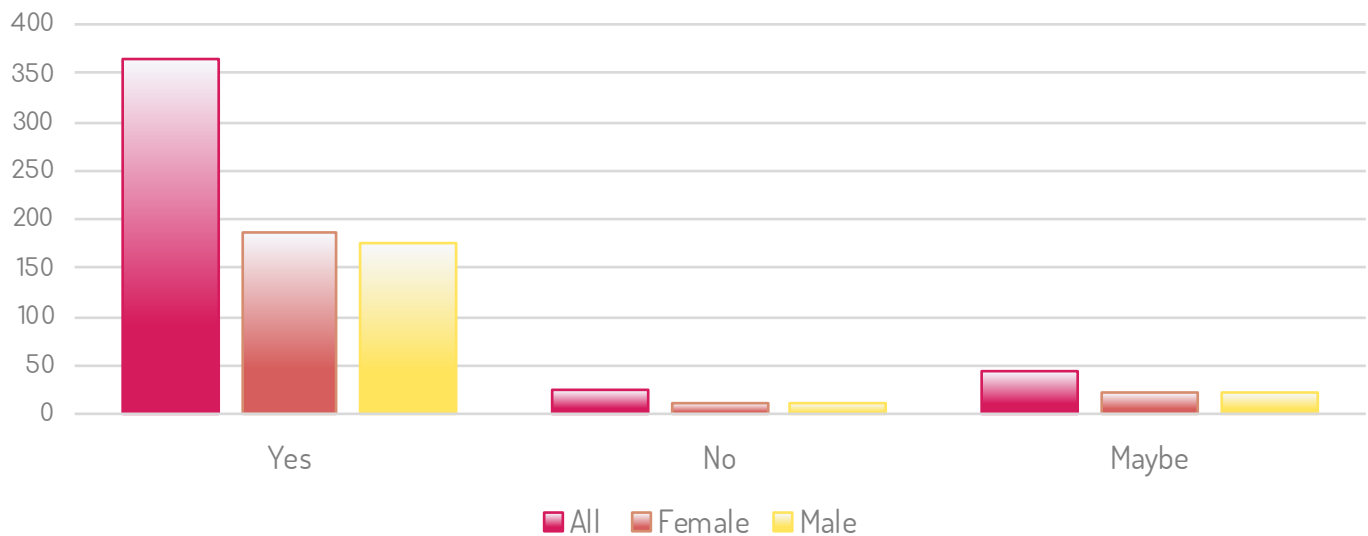


Table 3 Q1 I know what STEM means post-activity

	Yes	No	Maybe	Standard Deviation	Total Number
All	365 (84%)	24 (6%)	43 (10%)	156.46	432
Female	188 (85%)	12 (5%)	22 (10%)	80.71	222
Male	177 (84%)	12 (6%)	21 (10%)	75.75	210

- After a STEM learning activity was explained and delivered, the children were asked again to agree or disagree with the statement "I know what STEM means". Comparing the data, there is a significant shift from 62% before the activity to 84% in agreeing with this statement after the activity.
- For girls, this was a higher shift from 60% to 85%, although the boys also gained, moving from 65% to 84% in agreeing with the statement.
- Across all, only 6% still did not know what STEM means, and 10% said maybe they knew.

What I liked best was making the Sprite move

Chart 4 Q2 I have confidence in my abilities in undertaking STEM activities pre-activity

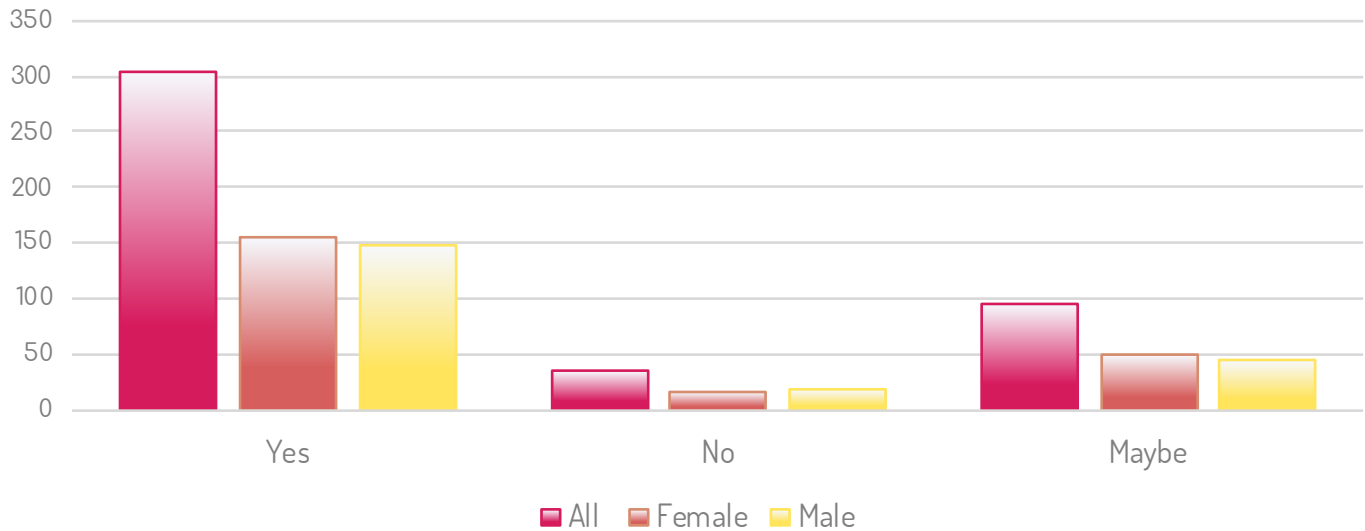


Table 4 Q2 I have confidence in my abilities in undertaking STEM activities pre-activity

	Yes	No	Maybe	Standard Deviation	Total Number
All	303 (70%)	35 (8%)	94 (22%)	114.98	432
Female	155 (70%)	17 (8%)	50 (23%)	58.84	222
Male	148 (70%)	18 (9%)	44 (21%)	56.17	210

- The majority of children (70%) agreed they were confident in their abilities to undertake STEM activities, with little gender variation in their responses.

What I liked best was making the Sprite move

Chart 5 Q2 I have more confidence in my abilities to do STEM activities post-activity

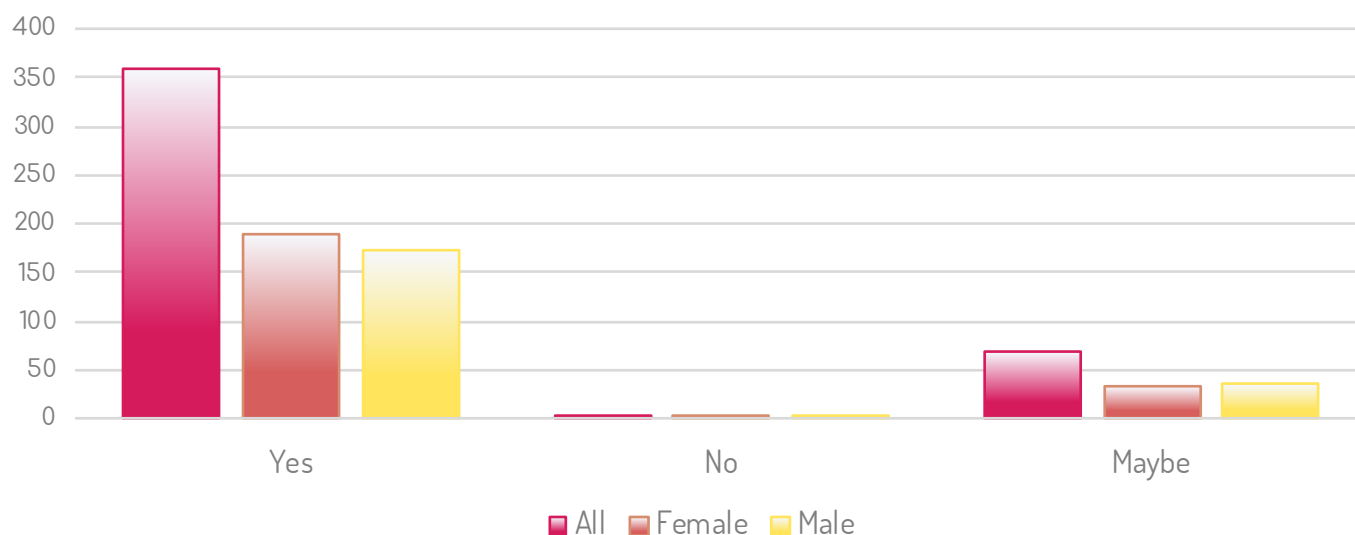


Table 5 Q2 I have more confidence in my abilities in undertaking STEM activities post-activity

	Yes	No	Maybe	Standard Deviation	Total Number
All	360 (83%)	4 (1%)	68 (16%)	154.95	432
Female	188 (85%)	1 (0%)	33 (15%)	81.66	222
Male	172 (82%)	3 (1%)	35 (17%)	73.3	210

- Overall children's reported confidence increased from 70% pre-activity to 83% post-activity. This was slightly higher for girls (85%) than boys (82%). There was a reduction from 8% to 1% for those who did not report confidence and for those who were unsure, from 22% to 16%. This was slightly better for girls, going down from 25% to 15%, than boys, going from 21% to 17%.

What I liked best was making the Sprite move

Chart 6 Q3 I am keen to learn about new things pre-activity

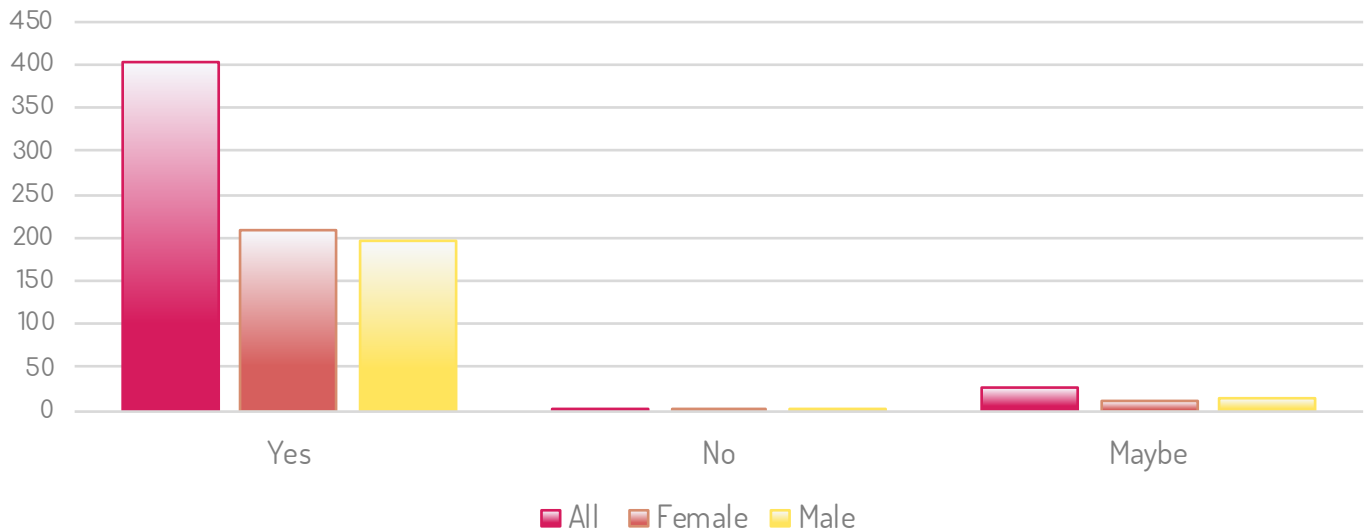


Table 6 Q3 I am keen to learn about new things pre-activity

	Yes	No	Maybe	Standard Deviation	Total Number
All	404 (94%)	3 (1%)	25 (6%)	184.07	432
Female	209 (94%)	1 (0%)	12 (5%)	95.56	222
Male	195 (93%)	2 (1%)	13 (6%)	88.5	210

- Nearly all children (94%) taking part agreed they are keen to learn new activities in this pre-activity statement. There is little difference between girls and boys responses.

What I liked best was making the Sprite move

Chart 7 Q3 I am keen to learn about new things post-activity

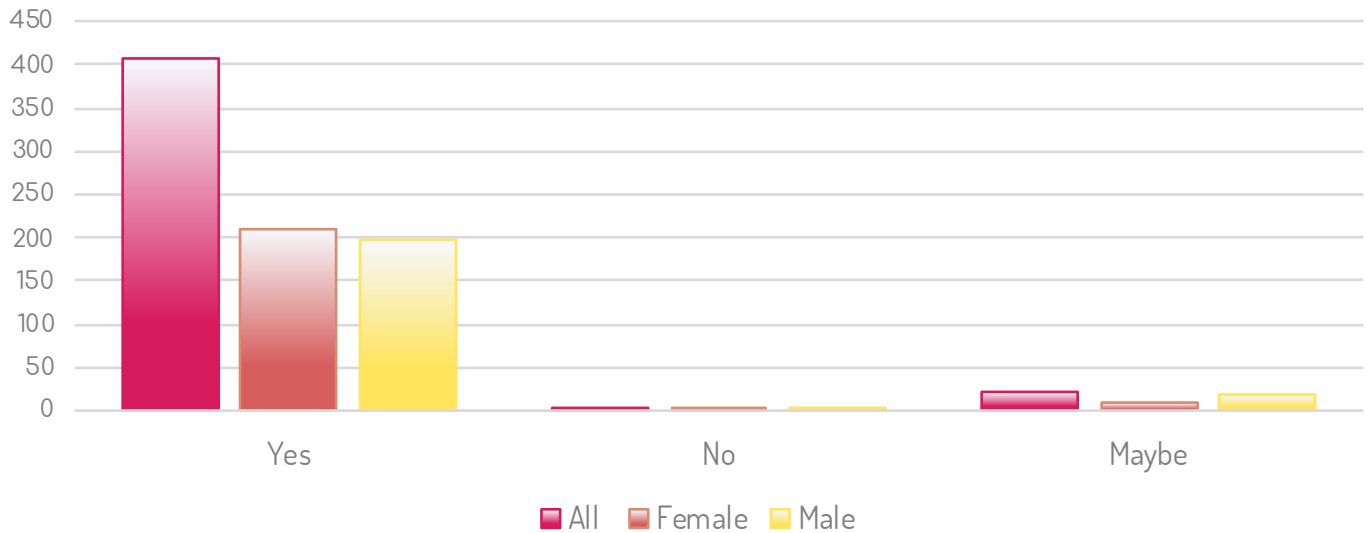


Table 7 Q3 I am keen to learn new things post-activity

	Yes	No	Maybe	Standard Deviation	Total Number
All	407	3	21	186.35	431
	(94%)	(1%)	(5%)		
Female	210	1	11	96.25	222
	(95%)	(0%)	(5%)		
Male	197	2	19	90.1	209
	(94%)	(1%)	(5%)		

- There is a slight increase (not statistically significant) in children agreeing with the statement "I am keen to learn new things" after taking part in the STEM activity.

What I liked best was making the Sprite move

Chart 8 Q5 I am confident in showing others STEM activities I have learned pre-activity

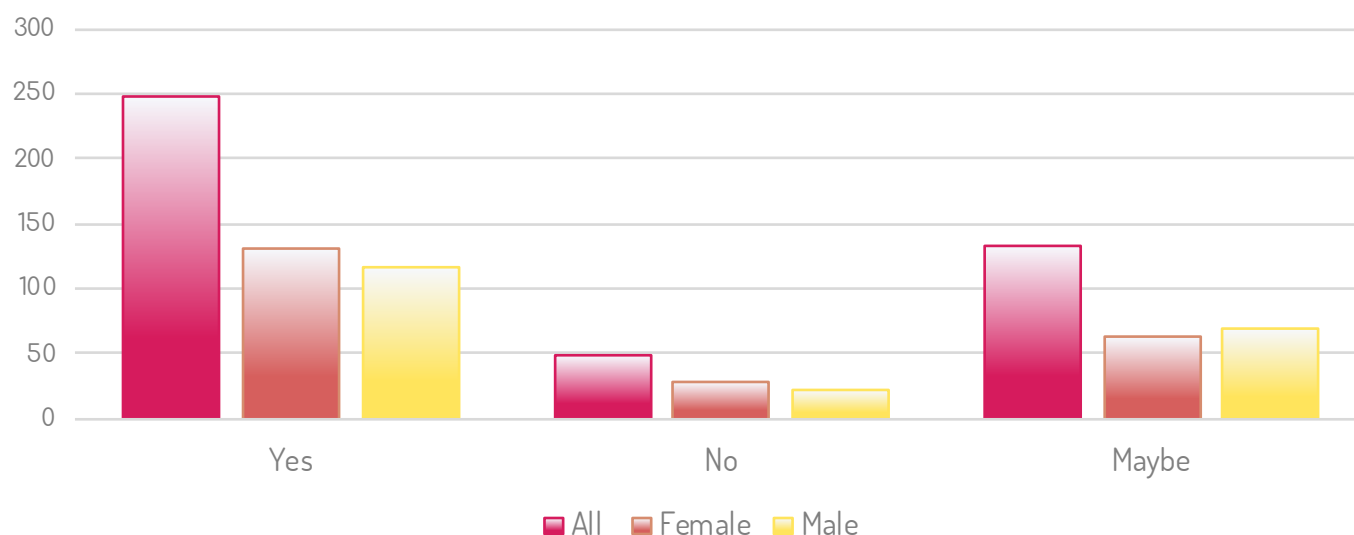


Table 8 Q5 I am confident in showing others STEM activities I have learned pre-activity

	Yes	No	Maybe	Standard Deviation	Total Number
All	248 (58%)	48 (11%)	133 (31%)	81.96	429
Female	131 (59%)	27 (12%)	63 (29%)	43.12	221
Male	117 (56%)	21 (10%)	70 (34%)	39.19	208

- Before the STEM activity, 58% of children agreed they were confident in showing others STEM activities they have learned, this is slightly higher for girls (59%) than boys (56%). Around a third of all children (31%) said maybe, and 11% said no. There were slight variations in that more boys (34%) than girls (29%) said maybe but more girls (12%) said no than boys (10%).

What I liked best was making the Sprite move

Chart 9 Q5 I am confident in showing others STEM activities I have learned here post-activity

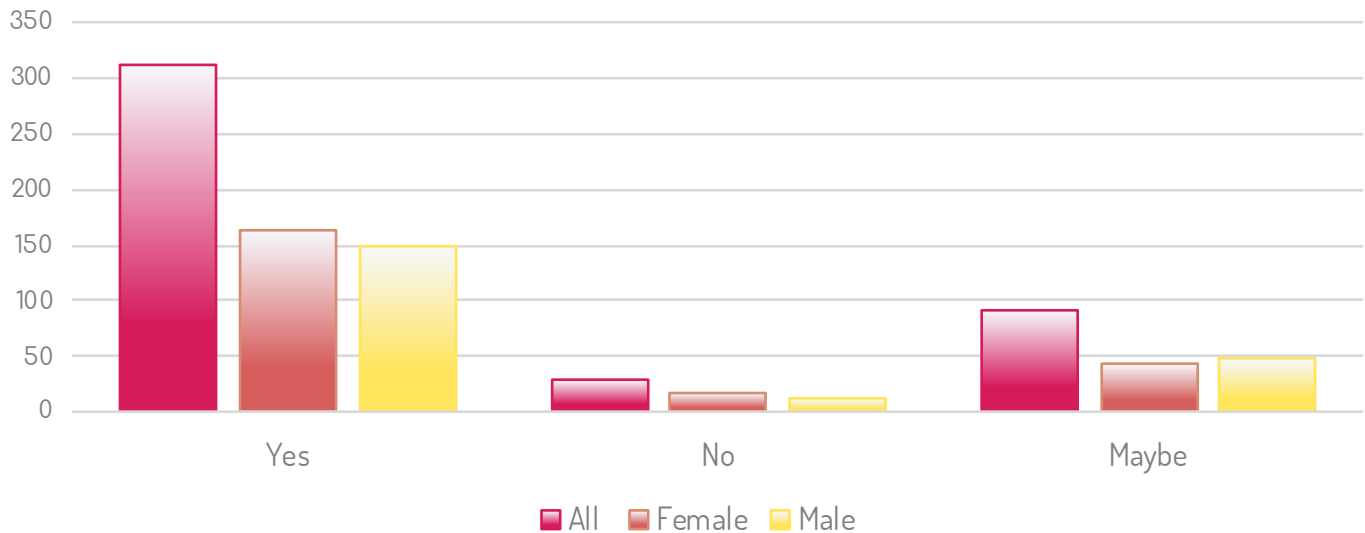


Table 9 Q5 I am confident in showing others STEM activities I have learned post-activity

	Yes	No	Maybe	Standard Deviation	Total Number
All	311 (72%)	28 (6%)	92 (21%)	121.17	431
Female	163 (73%)	16 (7%)	43 (19%)	83.89	222
Male	148 (71%)	12 (6%)	49 (23%)	57.41	209

- There was a significant shift after the STEM activity from 56% to 72% of all children in being confident in showing others STEM activities they have learned. For girls, this went from 59% to 73% ,and for boys, from 56% to 71%. Those not agreeing with the statement went down to 6% from 11%, while those who maybe agreed went down from 31% to 21% overall. In the gender breakdown, girls choosing maybe went down from 29% to 19%, and boys from 34% to 23%.

What I liked best was making the Sprite move

Chart 10 Q6 I want to do more STEM activities post-activity

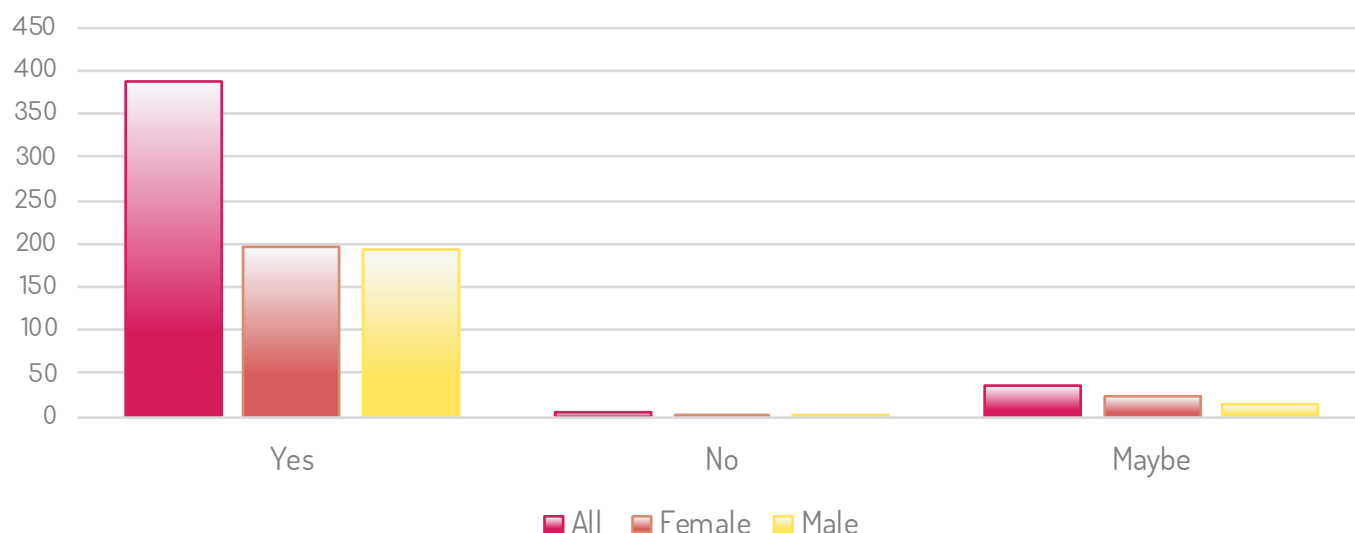


Table 10 Q6 I want to do more STEM activities post-activity

	Yes	No	Maybe	Standard Deviation	Total Number
All	388 (91%)	4 (1%)	36 (8%)	173.97	428
Female	196 (89%)	2 (1%)	23 (10%)	86.93	221
Male	192 (93%)	2 (1%)	13 (6%)	87.09	207

- Overall 91% of children taking part agreed that they want to do more STEM activities, with 93% boys and 89% of girls agreeing with this statement.

What I liked best was making the Sprite move

Chart 11 Q7 I have gained new skills by doing these STEM activities post-activity

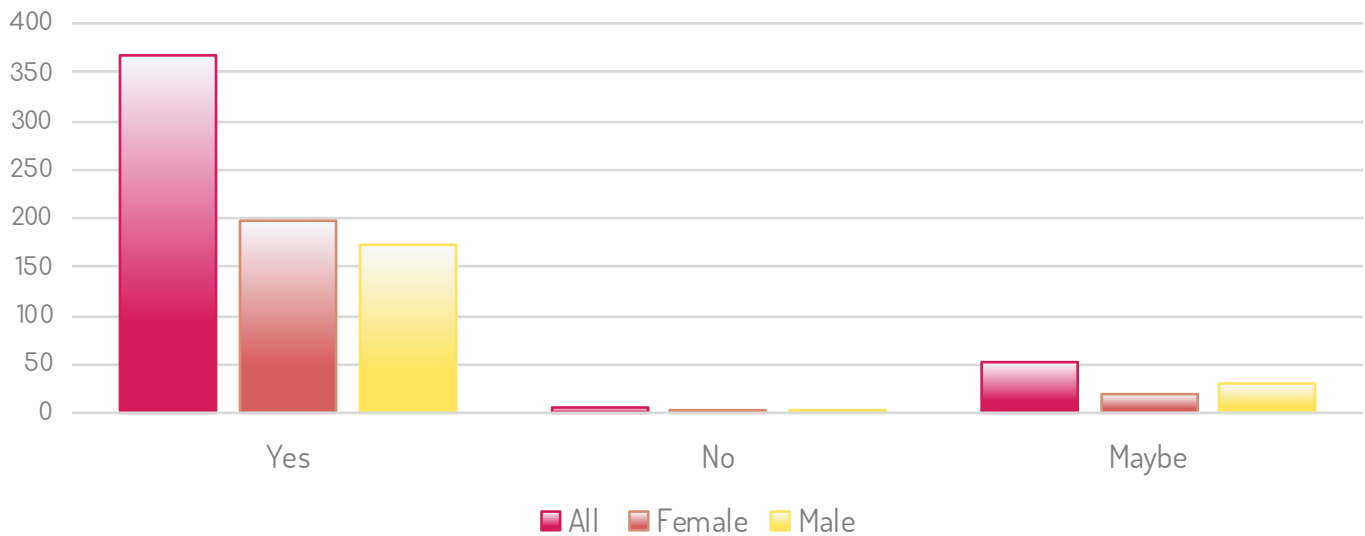


Table 11 Q7 I have gained new skills by doing these STEM activities post-activity

	Yes	No	Maybe	Standard Deviation	Total Number
All	369 (86%)	6 (1%)	52 (12%)	161.37	429
Female	197 (89%)	3 (1%)	21 (10%)	87.52	221
Male	172 (83%)	3 (1%)	31 (15%)	73.96	206

- Overall 83% of children agreed with the statement that they have gained new skills doing the STEM activities; significantly this goes up to 89% of girls taking part compared to 83% of boys. With the lower numbers saying no or maybe, are not statistically significant, it is interesting that more boys thought they had only maybe learned new skills, 15% compared to 10% of girls.

5 Discussion Points

Going back to the questions asked at the start of this research, how do the results show that a difference has been made by this project?

5.1 If STEM activities are provided in out of school care, would this help address the attainment gap in STEM?

The postcode analysis of all students registered for courses across Year 1 and 2, using data and deciles from the Scottish Index of Multiple Deprivation, shows that students worked in services where 64% were at decile 5 or below, on a scale of 1 = most deprived and 10 = least deprived areas. Indeed, 25% of students worked in areas at point 1 or 2 on this scale.

It is important to point out; however, that living in an area of high deprivation does not necessarily mean that every individual concerned is deprived. Furthermore, by necessity, lone parents rely more on out of school care, no matter where they live, and services also cater for children with a wide range of additional support needs.

However, with these notes of caution, taking this together with all the other results and research by Tanner et al (2016) and the Afterschool Association (2018) in the US, does suggest that out of school care has a clear role in addressing the attainment gap in STEM. This also suggests that the most disadvantaged children who do not currently attend, should be supported to attend out of school care to help close the attainment gap.

5.2 If STEM activities are provided in out of school care, would this address the Gender Gap in STEM?

Of 433 responses, 222 were female and 211 male. Given that 51% females and 49% males took part in the STEM activities, and this survey (Chart 1), it is clear that providing STEM activities in out of school care led to more engagement of girls, and indeed, engaged mainly female staff (81%) in the training provided.

If we compare this to the figures of 16% young women choosing computing or engineering subjects (Scottish Government, 2018), this is a significant finding and demonstrates, alongside other results, that providing STEM activities in out of school care helps address the Gender Gap in STEM. Importantly, it does so before secondary school age, thus engaging girls' interest, and supporting new skills and increased confidence in STEM.

5.3 If STEM activities are provided in out of school care, would this engage more older children in STEM?

Overall, the majority (24%) of children who took part are aged 8, or 22% aged 10. There is little difference for females in terms of the age range with 25% aged 8, and 24% aged 10, and for males, 23% aged 8, and 21% aged 10. Whilst some 11 to 13 year olds also took part, the overall age range was 4 to 13, but 330 children were age 8 or older (Chart 1). Feedback and comments from older children will be a focus of learning log analysis in the final report, but for now, the data on the 8 year olds to ten year olds suggests this helped older children engage in STEM activities, but for future similar courses, students should be asked to target older children more.

What I liked best was making the Sprite move

5.4 If STEM activities are provided in out of school care, would this increase understanding of what STEM is?

Although a fairly high number of children stated they already knew what STEM means, with 5% more boys (65%) than girls asserting this (60%), the delivery of the STEM activities produced a significant gain overall from 62% of children to 84%.

This was more marked for the girls, moving from 60% to 85% in understanding what STEM means, although the boys also gained, moving from 65% to 84% in agreeing with the statement.

Across all respondents, only 6% still did not know what STEM means, and 10% said maybe they knew (Chart 3, table 3).

These results demonstrate that providing STEM activities in out of school care leads to an increased understanding of what STEM means, and even more so for girls.

5.5 If STEM activities are provided in out of school care, would this increase children's confidence in carrying out STEM activities?

Overall children's reported confidence in their ability to do STEM activities increased from 70% pre-activity to 83% post-activity. This was slightly higher for girls (85%) than boys (82%) (Chart 5, table 5). Children's confidence in their own abilities was already high but the results do show that the STEM activities increased their levels of confidence by a significant factor. An additional question on whether the children were keen to try new things (Chart 7, table 7) showed very little change in the high (94%) levels of agreement with this statement for both boys and girls.

5.6 If STEM activities are provided in out of school care would this increase children's confidence in sharing STEM skills with others?

There was a significant shift after the STEM activity from 56% to 72% of all children in being confident in showing others STEM activities they have learned. For girls, this went from 59% to 73% and for boys, from 56% to 71% (Chart 9, table 9). This is an important question in terms of assessing improvements in children's confidence, as being able to share learning about it is an important step to understanding an activity. The STEM activities did help increase children's confidence by a significant amount, and also reduced the number of children unsure about being able to do so.

5.7 If STEM activities are provided in out of school care, would this encourage children to do further STEM activities?

The provision of the STEM activities in out of school care definitely encouraged children to do further STEM activities with overall 91% of children taking part agreed that they want to do more STEM activities, with 93% boys and 89% of girls agreeing with this statement (Chart 10, table 10).

What I liked best was making the Sprite move

5.8 If STEM activities are provided in out of school care, would this result in learning new skills in STEM?

Undoubtedly, children learned new skills in terms of the STEM activities provided, 83% of children agreed that they have gained new skills doing the STEM activities; significantly, this goes up to 89% of girls taking part compared to 83% of boys. With the lower numbers saying no or maybe, not being statistically significant, it is interesting that more boys thought they had maybe learned new skills (15%) compared to 10% of girls (Chart 11, table 11).

Interim results summary year 1

Thanks to the students on the courses and the children's active participation, the results across all eight questions demonstrate the positive impact in terms of addressing the attainment and gender gaps in STEM, and engaging more girls and older children in new STEM activities. Children's understanding and confidence in STEM increased, including in sharing skills, and the project inspired interest to go on doing more STEM activities and clearly led to new skills in STEM for the majority of children and staff taking part.

5 Conclusion and Next Steps

This interim report has provided a brief overview of the overall SOSCN STEM Champions in out of school care project and has focused on the research on the highly positive impact of STEM playful learning activities on the children in out of school care, and their participation in both carrying out the activities and sharing their views with us in the survey materials. The course providers, especially West College Scotland, which gained a commended Award from the College Development Network for the new Creative Computing course we designed, also played a clear role in this success.

Without funding from the Scottish Government Children Young People and Families Early Intervention project grant, this project would not have been possible, and we are all grateful for this investment.

Year 2 results, and learning logs from children will be analysed and the data added for the final report once the two year delivery of courses and research ends in March 2019.

Further related reports will be added to underpin the overall final report on the project; these will cover:

- The literature reviewed informing the development of the project and questions.
- Deeper analysis of differences in age sets, e.g. Under eights compared to over eights.
- Descriptions of the actual STEM activities taught to students and children.
- Illustrative case studies from students if provided.
- Ongoing sharing of information on free or low costs STEM courses and resources for out of school care.
- Disseminating the interim results as widely as possible in one page graphic form.
- Child friendly results poster to thank all services, staff and children taking part.

The title of this report is drawn from one of the children's learning logs in completing a statement about what they liked best about a creative computing activity. A sprite, referred to here is an animated on screen character.

Scottish Out of School Care Network, March 2019

What I liked best was making the Sprite move

References

- Afterschool Alliance (2018), Students learn more with afterschool STEM, Afterschool Alliance
<http://afterschoolalliance.org/documents/STEM/students-learn-more-with-afterschool-stem-2018.pdf>
- Audain, I & Shoolbread, A. (2015). Learning about Play, SOSCN, Glasgow, Scottish Government, Edinburgh [online] Report
<http://www.gov.scot/Resource/0049/00490684.pdf>
- Education Scotland (2015) Research Briefing: Looking at Gender Balance in STEM subjects at school, Knowledge into Action series
https://education.gov.scot/improvement/documents/sci5_genderbalanceinstem/genderbalancebriefing_tcm4-869326.pdf
- First Minister's National Advisory Council on Women and Girls: (2018) Monthly Spotlight WOMEN AND GIRLS IN STEM, NACWG
<https://onescotland.org/wp-content/uploads/2018/10/What-we-already-know-STEM.pdf>
- Scottish Out of School Care Network (2018)
<https://soscn.org/participate/stem> online information on current (March 2019 course).
- Scottish Out of School Care Network (2018) Out of School Care Workforce Survey 2017
https://soscn.org/downloads/research/OSC_Workforce_Survey_Results_2017.pdf
- Scottish Out of School Care Network (2005) "What's for us? Out of school care services for young people. Meeting the needs of older children"
https://soscn.org/downloads/research/whats_for_us.pdf
- Scottish Out of School Care Network (2006) "Your Time- Your Club"
https://soscn.org/downloads/research/your_time_your_club.pdf
- Scottish Government (2016) Introducing The Scottish Index of Multiple Deprivation 2016
<https://www2.gov.scot/Resource/0050/00504809.pdf>
- Scottish Government (2017) SCIENCE TECHNOLOGY ENGINEERING MATHEMATICS Education and Training Strategy for Scotland, Scottish Government
<https://www.engenderingstem.eu/wp-content/uploads/2018/01/STEM-Education-and-Training-Strategy-for-Scotland-2017.pdf>
- Tanner, E., Chanfreau, J., Callanan, M., Laing, K., Paylor, J., Skipp, A. and Todd, L. (2016). Can out of school activities close the education gap? (Briefing Paper 4). Accessed at:
www.natcen.ac.uk/media/1216042/can-out-of-school-activities-close-the-education-gap.pdf
- Tanner, E., Chanfreau, J., Callanan, M., Laing, K., Paylor, J., Skipp, A. and Todd, L. (2016). Out of school activities during primary school and KS2 attainment, Centre for Longitudinal Studies. Available here:
www.natcen.ac.uk/media/1123192/cls-wp-2016-1-out-of-school-activities-during-primary-school-and-ks2-attainment.pdf

What I liked best was making the Sprite move

Appendix

1. Survey guidance and children's survey

2. Creative Computing for After School Care Workers

West College Scotland course brochure

3. Introduction to STEM activities for Out of School Care Workers

Glasgow Clyde College course brochure

Extract from Guidance for Students:

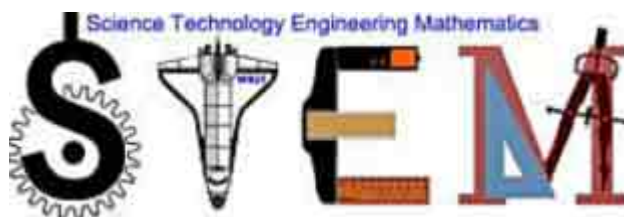
SOSCN ethical guidelines:

Page | 1

As we expect constant evaluation as you deliver activities to children in your service please gain parental approval as soon as possible for their children's involvement: You can use the copy of our ethics below or adapt for your service.

1. Participation must be entirely voluntary and the purpose and use of the survey clearly explained.
2. Parents should be asked for permission for their children to take part
3. All must be assured of anonymity and that no individual will ever be identified unless willing to be quoted/photographed to illustrate a success.
4. The data you collect can be collated by you to inform your own practice but all of it is also copyright to SOSCN for the national collation of information on the overall case studies for the STEM project
5. The information will be used to help SOSCN demonstrate children gain new skills in STEM in out of school care
6. Thank everyone for taking part in this important work
7. Where children need help in drawing or answering questions please ensure this is done in a way to keep their confidence and without influencing their responses
8. We suggest if possible that staff who have done or are doing qualifications which include research skills and ethics are the ones to lead the survey work in the service so the work is robust and fairly conducted.
9. If at any point a child or parent or carer no longer wants to participate that is fine.

This is why for the following 4 pages of children's materials we ask that you always keep the first page attached or available so children know what this survey is about and their rights to take part. It also helps you explain what STEM is to the children.



Children's Evaluation of STEM Activities:

Our Survey

We are the Scottish Out of School Care Network, the national organisation helping out of school clubs across Scotland.

Staff in your club will be providing you with some specific activities which help children learn new skills in Science, Technology, Engineering and Maths (STEM) in a fun and interesting way.

The activities are part of a national project to find out what children want or like to do in STEM games in out of school care, so your views on the activities will really help us.

Our Code for you:

- Your help with this survey every time is really appreciated
- It is totally your choice to complete this
- There are no right or wrong answers
- We respect your rights to privacy so no-one will identify you
- If you have a worry about anything in this survey or about the STEM activities please tell your out of school care worker.
- An adult can help you fill this in but will keep your views private

CHILD PRE ACTIVITY SURVEY

Tutor put Activity, date and code here

Activity
Date
Code
Survey starts for children here:
Please tell us your age and if you are a boy or a girl
Age: Gender:

Page | 3

You fill this one in *before* the activity

	Tick or colour the smiley face closest to how you agree with each statement	Yes	Maybe	No
1	I know what STEM means	☺	☹	☹
2	I have confidence in my abilities in undertaking STEM activities	☺	☹	☹
3	I am keen to learn about new things	☺	☹	☹
4	I know how to do this activity	☺	☹	☹
5	I am confident at showing others how to do STEM activities I have learned	☺	☹	☹



CHILD POST ACTIVITY SURVEY

Tutor put activity name date and code here

Activity: Date: Code:

Children: Please tell us your age and if you are a boy or a girl -

Age: Gender:

Now please fill this one in *after* the activity

	Statement	Yes	Maybe	No
1	I know what STEM means	☺	☹	☹
2	I have more confidence in my abilities to do STEM activities	☺	☹	☹
3	I am keen to learn about new things	☺	☹	☹
4	I know how to do this activity	☺	☹	☹
5	I am confident in showing others how to do STEM activities I have learned here	☺	☹	☹
6	I want to do more STEM activities	☺	☹	☹
7	I have gained new skills by doing these STEM activities	☺	☹	☹



CHILDREN'S STEM Learning Log:

Service	
Student	
Child code	
Age	
Gender	

Page | 5

To be completed by children for each activity and kept in a folder or file they access

No right or wrong answers write or draw what you think

Name of Activity
What I liked best was
I learned how to....

Please send copies of this to SOSCN as it helps show children may learn something new in STEM
THANK YOU CHILDREN.

WHERE AND WHEN WILL IT BE HELD?

Commencing Tuesday the 24 October this 12 week course will take place every Tuesday evening from 6.30-9pm at the Colleges Paisley campus.

IS THERE A COST?

The course is **FREE** however a deposit of £50 is payable towards the STEM kitbag.

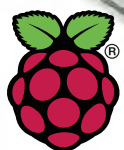
ELIGIBILITY

This course is for practitioner staff in out of school care services.

For more information or to request an application pack please contact:

recruitment@soscn.org

Funded by the Scottish Government Children, Young People and Families Early intervention Project Fund.



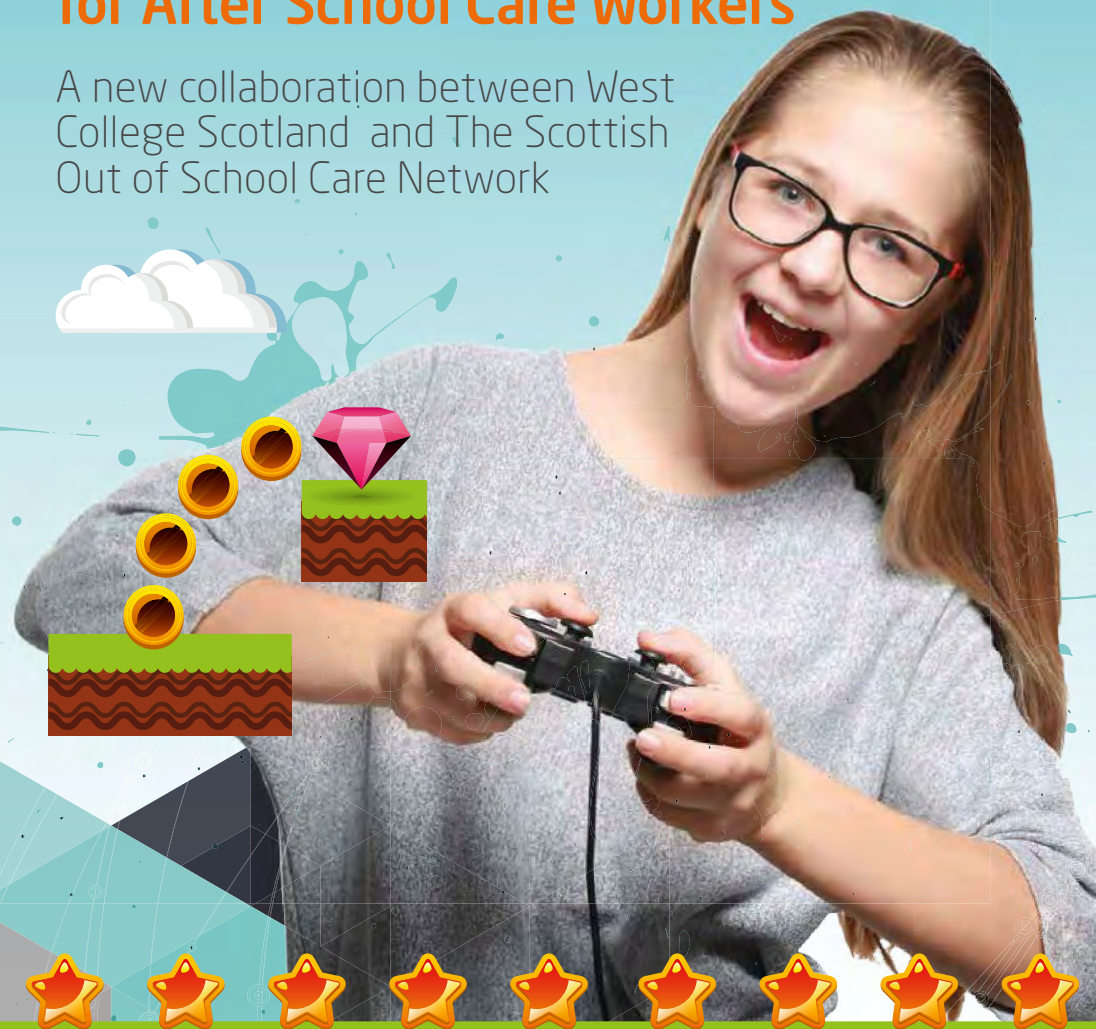
Raspberry Pi

SOSCN is a Scottish registered charity (SC020520)



Introduction to Creative Computing for After School Care Workers

A new collaboration between West College Scotland and The Scottish Out of School Care Network

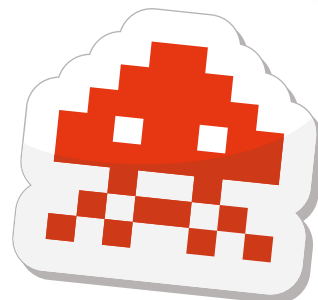


West College Scotland has teamed up with The Scottish Out of School Care Network (SOSCN) to provide STEM training for practitioner staff in out of school care services.

COURSE CONTENT

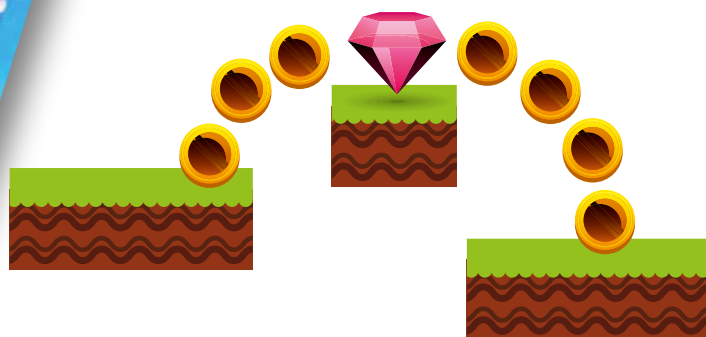
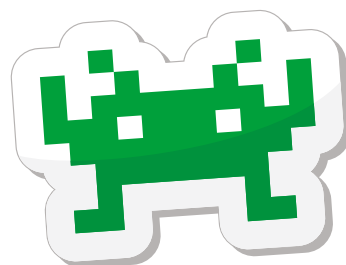
This course aims to equip you with the skills needed to introduce creative computing into your after school care setting using a variety of tools, including: Scratch, Microbit and the Raspberry Pi.

Throughout the course you will learn how to create games in Scratch and make controllers using the Makey Makey and everyday objects such as play-doh or fruit. You will also make digital badges, games and music using the Microbit and get creative with Minecraft on the Raspberry Pi.



PROGRAMME

WEEK	Course Content
1	Introduction to the course Introduction to the Micro:bit
2	Making games with Micro:bit
3	Micro:bit activities with sound
4	Introduction to Scratch and making games
5	Making Games with Scratch
6	Introduction to Makey Makey and how it works with Scratch
7	Introduction to the Raspberry Pi including setup and overview of features on Pi – including Minecraft/Python
8	Minecraft/Python on raspberry pi
9	Overview of sessions to date and creating your own session
10	Peer mini sessions – working together to deliver a session and receive peer feedback
11	Peer mini sessions – working together to deliver a session and receive peer feedback
12	Peer mini sessions – working together to deliver a session and receive peer feedback





Introduction to STEM activities for Out of School Care Workers

W: glasgowclyde.ac.uk



This course is a new collaboration between the Scottish Out of School Care Network and Glasgow Clyde College, providing staff in out of school care with play for purpose STEM training.

About this course

The course aims to increase your skills, knowledge and confidence to deliver STEM activities to your service users by focusing on fun indoor and outdoor activities relating to:

- Forensics
- Colour
- The Human Body
- Engineering

Location: Glasgow Clyde College, Langside campus

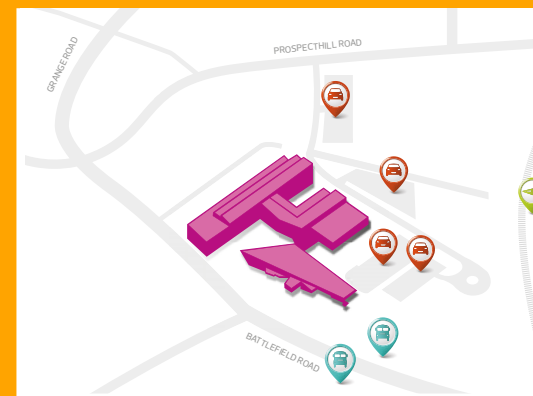
Start date: Friday 1 December 2017

Duration: 10 weeks from 9.45am- 12.45pm
(Please note the final 4 sessions will take place on a Monday)

Eligibility: This course is aimed at practitioner staff in out of school care services.

Cost: You will be supplied with all the materials you will need in a course Kit Bag. The course is free.

Week Number	Date	Course Content*	Location (All venues are based in Glasgow Clyde College Langside campus)
1	1/12/17	Introduction to the course	The Space
2	8/12/17	Fun with forensics	The Space
3	15/12/17	The human body	The Space
4	12/1/18	Colour through chemistry	The Boardroom
5	19/1/18	Materials – learning about textiles	Classroom TBC
6	26/1/18	Mathematics	The Space
7	Monday 29/1/18	Outdoor Play	The Space
8	Monday 5/2/18	Outdoor Play - continued	The Space
9	Monday 19/2/18	Engineering – Technology	The Space
10	Monday 26/2/18	Reflection and celebration	The Space



Langside Campus

50 Prospecthill Road, Glasgow G42 9LB



This free course is funded by SOSCN via their STEM Champions project grant, through the Scottish Government Children, Young People and Families Early Intervention Project Fund.

For further information or to request an application please email: recruitment@soscn.org

www.soscn.org

SOSCN is a Scottish registered charity (SC020520)