



Scottish Government STEM Consultation: Engagement with Children & Young People

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Executive Summary

Children in Scotland has carried out a short exploratory research project for the Scottish Government relating to the recent Science, Technology, Engineering and Maths (STEM) learning consultation: 'A STEM Education and Training Strategy for Scotland', with the aim of ensuring children and young people's voices are heard by policymakers. The project involved a series of engagement activities with children and young people to gather their views and attitudes on learning, work and their lived experience of STEM.

The project involved workshops with 71 children at Dalry Primary School, Edinburgh, Kelloholm Primary School, Dumfries and Galloway and Sgoil Ghaidhlig Ghlaschu, Glasgow. The children and young people involved ranged from P3 to S2 and came from a diverse range of black minority ethnic (BME) and socio-economic backgrounds, with a variety of additional support needs.

We asked the children and young people about their experiences of STEM-related learning, their awareness and understanding of STEM professions and how children and young people would like to learn going forward.

The project found that both general learning preferences and the barriers to learning that children and young people experience are varied and very clearly individual.

The findings of the project also suggest that STEM subjects are being covered in schools and in the main children are enjoying their experience of this. Engineering is perhaps happening less and Maths seems to be less popular; children and young people did however accept the importance of Maths, especially in relation to the other STEM subjects.

There was also strong knowledge about jobs and careers and consideration of what people may want from a job generally. Children and young people also appear to be aware of the variety available within STEM related careers, mostly based on their learning in school and their own personal experience.

Another key finding of the project was in relation to gender bias within STEM; while the children we spoke to felt that anyone could/should be able to do any job, there was still an underlying theme that there is a gendered nature to certain job roles, such as Nurse and Builder. These perceptions are affected by personal experience and the media. This was particularly prevalent amongst older groups, with one group identifying gender perceptions and bias as barriers to their potential progression in the STEM field.

Key messages can be found throughout the 'detailed findings' section and our conclusions and recommendations can be found at the end of this paper. Appendices contain specific details, statistics and direct quotes from the children and young people.



STEM hub discussion

Background

Children in Scotland is the collective voice for children, young people and families in Scotland, and organisations and businesses that have a significant positive impact on children's lives. We are an influencing and membership organisation, comprised of representatives from the voluntary, public and private sectors. Our vision is that Scotland becomes a world leader in securing the wellbeing of every child and improving the quality of every childhood.

Children in Scotland's goal is to engage children and young people in meaningful, ongoing dialogue and to enable them to have effective and fulfilling participation across the different areas of our work. We work to ensure that the voices of children and young people influence the decisions and practices of policymakers and practitioners.

We were commissioned by the Scottish Government to undertake a short programme of engagement activities with children, mostly in primary school settings, gathering their views and attitudes, as well as lived experience, in relation to STEM learning in schools. Their views will be used to inform the Scottish Government consultation 'A STEM Education and Training Strategy for Scotland'.

Participants

A total of 71 children and young people took part in this project, including groups of children and young people from the following settings:

1) Dalry Primary School, Edinburgh, which has the largest ethnic diversity within Edinburgh primary schools and is the state primary school closest to Children in Scotland's offices. We really enjoyed meeting and working with the pupils and staff in the P3/4 class and P6 class on our two separate visits. We worked with 37 children in total with a variety of abilities, ASN and Scottish Index of Multiple Deprivation backgrounds. EAL (English as an Additional Language) is a particular support need for many of the pupils due to the school experiencing a large ethnic diversity in its pupil body.

2) Kelloholm Primary School, Dumfries and Galloway is one of the '57 Challenge' primary schools within the Scottish Attainment Challenge, as it is among the most deprived in Scotland. We worked with the P5 pupils and teacher and enjoyed the rural setting. The children here did talk about outdoor activities far more than the city based children, in relation to their learning opportunities, leisure activities and for some their farming background and career plans. We worked with 21 children in this setting, again with a variety of abilities and ASN.

3) Sgoil Ghaidhlig Ghlaschu is a 'through' school in Glasgow with a diverse intake of pupils. We took the opportunity to work with girls from P7/S1/S2, with the added aspect of Gaelic and English as the medium languages. We worked with 13 girls, with a variety of SIMD backgrounds and ASN (including Autism Spectrum Disorder). Partly due to the older age range, we found they were more able to voice their perceptions of barriers to learning and gender biases in the STEM career area.

Methodology

The aim of the sessions was to produce quantitative and qualitative information on children's knowledge, views, attitudes and lived experiences of STEM subjects. This covered:

- Experience of STEM learning does it happen in schools, examples of work, resources used, are children engaged with it, do they enjoy it?
- STEM related jobs the children's perceptions about what these jobs might be, stereotypes of who does these jobs (especially gender based)
- What influences these perceptions? parents, family, peers, school (people, resources), the media?
- Any gaps what would the children like to know or learn, how would they like to learn this (e.g. visits, learning approaches)

To ensure the ability to compare and contrast the information gathered, the engagement activities took the same framework across all four sessions:

- Introduction who we are (Children in Scotland staff), the aims of the session, the shape of the day
 etc
- Group agreement how we can ensure everyone will enjoy the session and feel able to contribute
- Session 1: Things that help us learn- in the classroom, across the wider school environment and outside school in the community
- Session 2: STEM Hubs four STEM areas with props, images and words, considering: what have we done around this in school, how we did this, what we enjoyed, any difficulties
- Session 3: STEM jobs the general concept of jobs and careers, what might people look for in a job, awareness of STEM related jobs and gender perceptions within these
- Conclusion thank you and what happens next

In all sessions we used participative practices to support the understanding of the children and young people and to create an environment that gave them the opportunity, skills and confidence to respond to the consultation. Our variety of participation methods ensured that by the end of the engagement sessions young people who were less confident or vocal within a group setting also had their voices heard. School staff were also available to support the children.

Findings from the three schools were synthesised and are presented below, according to each session area. We did not find significant differences in terms of schools, age groups or gender of participants and consequently have not presented any analysis by demographic group. However, we did note the older young people were able to articulate barriers to learning and gender biases more readily.



Spaghetti and marshmallows challenge



Newspaper tree challenge

Detailed findings

For each session we have aimed to summarise the key areas and highlight key messages. For further clarity we have added specific details and direct quotes (where possible) from the children and young people in the appendices.

Session 1 Learning

1.1 What helps us learn

The children and young people were able to identify what and who helps them learn in school, across the wider school context and outside school in the community:

- In the classroom the resources children use, the learning and teaching approaches staff utilise (such as group work and practical activities), the support children receive from staff, the classroom environment (including noise) and children's own feelings and health (including eating breakfast) are all factors which can impact positively on young people learning
- In the **wider school setting** ICT, clubs, further learning opportunities (including peer learning), pastoral care, the wider school environment (including the garden), events and trips and opportunities for responsibility (such as committees) were identified as being important to support learning
- In the community people (friends and family), organisations (Brownies), faith groups, local resources (library, cinema), the media, opportunities for responsibility (John Muir Trust) and children's own feelings and health (such as feeling curious and secure) are all supportive factors in children's learning.

There was not a clear consensus across the four groups as to the top three supports to their learning. Between them they identified fairly broad areas such as the media and clubs. However, 'trips', having 'fun' and 'calm teachers' did come up a couple of times each. It appears young people want to be engaged in what they see as exciting activities with supportive professionals, illustrated thus: "Having fun, getting info at the same time", "it's fun, you remember it", "Teacher explaining in a way you understand", "Talk about feelings if things are too difficult".

Key message – children and young people like to learn in different ways; learning preferences are individual.

Please see Appendix 1 for key areas, details and quotes.

1.2 Barriers to learning

As with approaches to learning, there were fairly general areas identified by the children and young people (both in and outwith the classroom). The four groups again did not have a clear consensus but identified four key areas:

- In **school** barriers are many and varied, including class size, the environment (noise, temperature), support from staff, bullying, children's own feelings and time for completing tasks: "If it moves too fast", "If you're unpopular...can't concentrate because you are thinking about it"
- At **home** barriers may include homework: "Stressful", "You try to do it quickly so you can do things you like. You don't absorb it or do it wrong", family issues, social media, lack of help and conflict with hobbies/faith activities: "Football makes me stop going to the Mosque"

- Additional support needs may also have an impact on children's ability to learn, including Dyslexia: "You and your parents may not know"
- **Personal/pastoral** issues may also be barriers, feeling pressure, not having someone to talk to: "Feeling upset if it is too hard"

What is a way of supporting learning for one young person is a barrier to another young person. For example, one pupil really enjoys it when the teacher puts Beethoven on (it helps them relax) another cannot concentrate and finds the music distracting. Quite a few children do find their fellow classmates a distraction at times: "You can't think if you feel distracted".

Key message – barriers to learning are varied and personal.

Please see Appendix 2 for key areas, details and quotes.



Science hub



A happy engineer

Please see Appendices 3-6 for key areas, details and quotes.

2.1 What have we done on this in school?

STEM subjects and related activities do appear to be covered in schools, with Engineering perhaps fairing a little less well. Many of the children struggled to connect engineering with work they had undertaken in the classroom and one teacher did speak to us about finding this area more difficult to cover and resource.

Areas covered include:

- Science examples that would come under the headings of Biology, Chemistry and Physics
- Technology hardware and software
- Engineering buildings and practical activities
- Maths arithmetic, algebra, weight, time

During the discussions it was clear that the children saw a lot of crossover in learning activities, sometimes finding it difficult to identify a specific 'Technology' learning experience. This perhaps reflects how teachers approach learning opportunities within Curriculum For Excellence's focus on Interdisciplinary Learning.

2.2 How did we do this?

It would seem that a variety of learning and teaching approaches and resources are used, including:

- ICT ipads, programmes such as Sumdog, Education City and Powerpoint: "We went to ICT and we researched about the Scottish wars of independence"
- Resources books, microscope, human body kit, number squares: "It is good to help to use a number line"
- Practical activities: "We used tea, salt, sugar and plastic cups"
- Media films, YouTube
- Trips Dynamic Earth
- Visitors with specialisms: "Somebody comes in and makes buzzers"

The children were enthusiastic about the variety they experienced – all enjoying different aspects.

2.3 What did we enjoy?

The children do enjoy the activities:

- General enjoyment they used words such as 'fun', 'interesting', 'play'
- Learning in general: "Learning something new blows your mind sometimes"
- Practical activities: "I enjoyed making the design for a pencil holder"
- Staff support: "The computing teacher is great"
- Working with others: "I like working with others, two brains are better than 1"

It is clear that children and young people especially like learning new things and having fun whilst doing so, in line with their learning preferences generally.

2.4 Any difficulties?

The children identified various difficulties around learning in STEM:

- Literacy: "Words are complicated", "Time in words is harder than Maths in numbers", "It is harder in words"
- Numeracy: "7 times table I forget, it's hard to remember", "Maths is boring"
- Memory: "It was hard because we were learning so much and I just forget", "Remembering the steps"
- Support: "Asking for help", "Needing help but not able to ask"
- Self-confidence: "That I'm not good at it"

Of the four STEM areas we explored with the children and young people it became apparent that Maths was perceived as being the least engaging and can be quite challenging. However, the young people were able to recognise that Maths is interrelated with Science, Technology and Engineering: "Maths is in everything"

We believe these findings reflect the children's general learning preferences and the barriers they experience across the curriculum. For example, children want to have fun and enjoy learning, to use a variety of learning and teaching approaches/resources and to be well supported.

Key message: the findings in this short project do not appear to show that STEM subjects throw up their own specific learning preferences or barriers. They reflect children and young people's learning experiences and preferences generally. However, two specific areas to consider are the perception of less engineering related activities and the experience for some children of Maths being more challenging.

Session 3 STEM jobs

3.1 Why do people work?

The children and young people were aware of the concept of jobs/careers. They engaged well with all aspects of this session and could consider why people work and what people might look for in a job. We found their responses generally fell under three key areas:

Key areas
Money – for food, clothes, water, home, family,
future, material items, tax
Enjoyment – using your strengths, learning new
skills, having fun, making friends
Helping others – older people, animals, giving
money to charity

Some of the children were practical in their answers: "If you have a family then you need the money", "Need water/food to live", "need a house" but were also quite altruistic (wanting to help other people, animals, charities). There was a focus on enjoying a job, with an understanding that we may spend quite a lot of our time at work.

Key message – schools are covering career education from an early stage, in line with Curriculum for Excellence guidelines.

3.2 Brewing a job - what would be important to have in a job?



The job cauldron

The children and young people identified quite a few aspects of what people may want from a job:

- Fun (reflecting what they want from their learning)
- Positive relationships with their colleagues, with no bullying
- Some young people felt that having enough money to live and a job that is enjoyable are not always mutually exclusive: "Sometimes situations might mean you have to do a job where you get paid well", "Sometimes you have to have one or the other" (a job you enjoy or a job that pays well)

- Aspects of independence were also reflected on, such as choosing when and where to have lunch, driving, working for yourself: "Choice in what you do"
- Developing skills that would be useful for the job and life in general, building on skills/strengths you may already have
- Working hours and a pleasant work environment were discussed: "Good to have breaks where they can go outside"
- We were also pleased to note a focus from some on work keeping people fit and healthy, including emotionally healthy by making friends: "To be healthy", "sugar in the body can burst your heart".

Key areas
Suited to strengths
Variety
Nice colleagues, inc. fair boss
Nice environment inc. clean, safe, sunlight
Security
Outdoors
Flexible hours
Meeting new people
No stress/bullying
Tea/coffee/lunch
Meetings
Driving
Travel
Learn new skills
Work for yourself
Choice
Friends, swapping things
To be fit and healthy

In a vote, the top aspects that the children and young people would like from a job in the future are as follows:

- Pay: "Need water/food to live", "need a house", "If you have a family then you need the money"
- Safe: "Good working conditions", "You don't want to die in your job"
- Helping others: "Because if someone is sick and you are a Doctor you can make them happy", "If you help someone they will come home with a smile", "It is nice when someone is happy, it makes you feel good"
- Fit/healthy
- Driving: "If your job is far away but don't want to go on a bus"
- No bullying: "Important that you won't be verbally or physically abused at your work", "Damaging for your self-esteem"
- Fun, not boring: "The more you enjoy the job the more promotions you will get", "If you like your job you don't care how much you get paid"
- Nice boss, linked to being fair and not bullying

It is interesting that feeling safe was so popular – perhaps reflecting their lack of knowledge or anxiety over working in places or with people they do not know/understand or have experience of as yet.

Key message – the children's perceptions and opinions about what they want from a job reflect why they think people work in general, with a focus on pay, enjoyment and feeling safe and secure.

3.3 STEM Jobs

The children were able to come up with a list of STEM related jobs. This was with a little prompting after the STEM hubs, which we believe supported their understanding.

The children's initial and popular responses were jobs traditionally related to STEM such as Doctor, Nurse, Scientist and Teacher. This seemed be due to their own experience and perhaps was also based on some of the props we used in the STEM hubs. However, overall they named jobs that seem to straddle the four STEM related areas, are a mixture of graduate and non-graduate jobs, are indoor/outdoor based, are 'academic' and 'manual' and that cover both genders in traditional stereotypes related to these jobs. The children and young people were also able to talk about other jobs such as Surveyor, Youtuber, Animator and an Engineer, working specifically with computers in the context of STEM. This was often based on their own experience outwith the school setting (such as family members).

We did not focus on the young people's attitudes towards pursuing a STEM career. However, in general, the pupils were positive about the jobs; no negative comments were made about these careers. A small number of pupils identified jobs they have a potential interest in. For example, one P6 pupil stated she wants to be an architect when she is older. Another pupil in P5 commented that the benefits of becoming a Surgeon would be working with blood, the pay, making friends and it would be exciting/boring on different days.

Key message – children and young people are aware of many STEM related jobs, especially if they have experience of it in some way. Their initial responses were fairly traditional.

Please see Appendix 7 for the list of jobs.

3.4 Gender perceptions

The children voted for jobs on whether they thought they were for a boy or a girl or either/both. Looking at the voting statistics the concept that anyone can do any job is prevalent: "It is up to themselves", "Because it doesn't really matter". For the majority of the time 'Boy or Girl' gains the largest percentage of the vote.

The exception to this rule is Astronaut and Nurse in one group (where Astronaut is seen by the majority as a boy's job and Nurse as a girl's): "When you picture it, you picture the men as the head doctor and the women as a nurse", and Builder in another group (where the majority consider it to be a boy's job): "I've never seen a female Builder", "Even in the movies".

It appears their perceptions of jobs and gender roles are influenced by their own experience, the media and their family/people with whom they have contact (teachers, doctors): "My mum is a Nurse and she works with a man who is a Nurse", "Male Teachers do Science, Maths and Computing... most of the Art is female", "I saw a movie".

However, as they get older we noted they are often more able to reflect on their own experiences and perceptions: "What you see doesn't mean that's the only thing that is there", "I know Architects are male, but in my head a lady does sitting and drawing".

A number of the quotes suggest that the children and young people we spoke to associate stereotypical characteristics of male/female with certain professions: "Feminine Doctors are nice and gentle and slow with you", "Men Doctors are straightforward", "Boys are stronger", "Mostly boys like football and

science", "Why would a man want to work in an office". Where gender bias exists it can be seen to be based on personal experience or what has been seen in the media: "I saw people...", "I have always seen and heard...", "In the movies...".

Key message – reassuringly children and young people are hearing the message that anyone can do any job, whether in school, in the community or through the media. However, based on some of the children's comments, there is still some work to be done on tackling a degree of gender bias in this area, coming from their own experience (perhaps a lack of visible role models) and what they see in the media.

Please see Appendix 8 for the details of specific jobs (voting statistics, the children's perceptions).

3.5 Barriers to STEM careers

We asked the girls at Glasgow Gaelic School what barriers there might be to STEM jobs for them in the future. Interestingly they did start discussing gender bias before this, whilst interacting with the STEM hubs: "It looks like it's to do with boys", "There isn't one we look at (the STEM hubs) and say that is a girl's job", "It feels like we shouldn't" (talking at the engineering hub specifically), "It's easier to imagine a boy doing hairdressing than a girl doing engineering". Clearly for some young females there are certain careers or industries which are seen as more traditionally male dominated sectors.

In general, they identified skills, attitudes and perceptions of gender roles (including their own) as possible barriers. They see STEM skills as being linked to Maths and formal education and those working in this area need to be competitive and creative. They are worried that other people may not be supportive of a STEM career for a girl and may not have seen a role model in the media or in their everyday lives to support their confidence. Gender 'boundaries' are also perceived as a barrier such as inequality in pay or being seen as 'feminine'.

Possible barriers	Quotes
Specific skills	"If you weren't good at Maths"
	"Proper education and training"
	"You need to be competitive"
	"A barrier to being an inventor is that you have to have ideas that
	help people"
Other people's attitudes	"You would get made fun of" (career as a builder or engineer)
	"Everyone's ideas because of TV programmes and how they have
	been raised" (discussion around stereotypes)
Gender perceptions	"You don't see feminine builders or plumbers"
	"Stereotypical boundary for girls"
	"Girls aren't strong enough to be a builder or maths teacher"
	"Boys will say girls are not as smart as everyone"
	"Boy footballers get paid a lot more than female footballers"
	"It's easier to imagine a boy doing hairdressing than a girl doing
	engineering"
	"I can more see women doing architecture than construction"
	"Insurance adverts and the AA the engineers fixing the cars are
	male" "The women has the broken down car and the man comes to
	fix it"

Key message: there is still some work to be done tackling gender role perceptions and the impact it may have on subject and career choices. There also seems to be a lack of visible role models.

Conclusions And Recommendations

This small study explored understanding and awareness of STEM subjects and professions within a small sample of children and young people from three schools in Scotland. The findings should not be viewed as representative of the views of all children and young people, nevertheless, a number of key themes have emerged that arose repeatedly through the course of this research and are useful to inform the Scottish Government's plans for STEM related education going forward. These include:

What helps us learn

There was not a very clear consensus across the four groups as to the top three supports to their learning. Clearly, children and young people like to learn in different ways; learning preferences are individual. Staff working in education need to consider a variety of approaches to learning and teaching to support these individual needs. Some approaches/supports highlighted by the children and young people include practical activities, group work and pastoral care.

Similarly, broad areas were identified as barriers to learning and the four groups did not have a clear consensus - indicating that **barriers to learning are varied and personal.** Some of the barriers highlighted by children and young people included pace of teaching, ASN, self-confidence/feelings, ICT issues and aspects of the classroom environment. Again, staff working in education need to consider a variety of approaches to learning and teaching to support these individual needs.

STEM learning and experiences

STEM subjects and related activities do **appear to be covered in schools**, with Engineering perhaps fairing less well or at least perceived to be so. It would seem **a variety of learning and teaching approaches and resources are used**, including ICT, trips and speakers. The **children said that they enjoyed the activities** - they especially liked learning new things and having fun whilst doing so. There were **some difficulties highlighted around literacy and numeracy** and a few other issues such as support given. Maths in particular seemed to be less well enjoyed.

The findings in this short project do not appear to indicate that STEM subjects present their own specific learning preferences or barriers but Engineering and Maths activities may need further consideration, including how to support staff to deliver these.

Jobs/Careers in general

The children and young people were aware of the concept of jobs/careers. They could consider **why people work and what people might look for in a job**. We found them to be practical in their answers (money for food, personal freedom) but also quite altruistic (to help other people). They would like work to be fun (as they want from their learning) and want to work with fair and nice colleagues, with no bullying.

Schools are covering careers education from an early stage, in line with Curriculum for Excellence guidelines. However, they may need support with the issues discussed below.

The children's perceptions and opinions about what they want from a job reflects why they think people work in general, with a focus on pay, enjoyment and feeling safe and secure.

STEM jobs

Children and young people were aware of many STEM related jobs. They named jobs that seem to straddle the four STEM related areas, indoor/outdoor, graduate/non-graduate etc. However, their initial responses were fairly traditional including Doctor, Nurse, Scientist, Teacher. **STEM career education should perhaps focus on more diverse jobs, reflecting innovative and creative careers in this area. Children do learn from their experience so a range of role models would also be a useful tool to learning.**

Gender perceptions

Looking at the findings the concept that anyone can do any job is prevalent in the young people at all ages. It appears their perceptions of jobs and gender roles are influenced by their own experience, their family and the media. Where gender bias exists it can be seen to be based on personal experience or what they have seen in the media. There is still some work to be done to tackle this bias. Again, a range of role models would be a useful tool to learning and breaking down gendered perceptions.

Barriers to STEM Careers

The girls at Glasgow Gaelic School identified **skills**, **attitudes and perceptions** (including their own) **of gender roles as possible barriers. There is still some work to be done** tackling gender role perceptions. This is clearly an issue across society but education could/should play a major role in tackling this. Interestingly, young people from across the schools identified teaching to be gendered at times – more females at primary and more men in Science at secondary.

Recommendations

Based on these findings, Children in Scotland makes the following recommendations:

For schools and teachers

- Continue to build in flexibility of teaching and learning approaches to allow for different learning preferences
- Focus on more engineering activities and making Maths as accessible and as engaging as possible. Children enjoy learning, especially when it is fun
- In career education, cover a diverse range of jobs and careers and consider a range of role models as a tool to help make it engaging and 'real'. Children in part learn from experience. This will also help break down gender bias in perceptions of STEM careers

For parents / carers

- Talk about STEM careers, particularly with girls to break down some of the gender myths
- Where possible, support schools with their STEM activities perhaps including role modelling careers

For Scottish Government / Education Scotland

- Support schools with guidance/resources to support greater emphasis on engineering activities and making Maths activities as engaging as possible
- Active recruitment campaigning to get more female teachers into STEM subjects (and male teachers into primaries)
- Greater awareness raising about STEM career possibilities for both boys and girls across society (thus reaching schools and families, perhaps using the media).

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Appendices

Appendix 1 What helps me learn

In the classroom

Key areas	Details	Quotes
Resources	 ICT: iPads, interactive boards Dictionaries Text books Piano 	
Learning/teaching approaches	 Outside treasure hunt 'Time machine' - lights off, using Powerpoint presentation Making things Working with each other 	"Having fun, getting info at the same time" "Two brains is better than one" "Share ideas" "Make a new friend" "Doing things not just writing"
Environment	 A good working space Quiet Relaxing music (e.g. Beethoven) Outside e.g. The Daily Mile 	"It makes me feel relaxed and I can do this" (classical music in class)
Professionals	 Calm people A teacher that has patience Explanations Pastoral care 	"Someone who doesn't treat us as younger than we are" "Teacher explaining in a way you understand"
Support	 Help with spelling, literacy and numbers One-one learning 	
Personal feelings/health	- Feel confident - Smile, feel happy	"Don't give up" "Eating- puts fuel in your brain" "Breakfast is the most important meal of the day"

Across school

Key areas	Details	Quotes
ICT	- Computer suite	
Clubs	- Choir	"There's lots of lunchtime and
	- Breakdance	afterschool clubs"
	- Mini Kickers	
Further learning opportunities	- Masterclasses (with worksheets)	
Peer learning	- Learning with other classes	
Support	- Pastoral Care	"Talk about feelings if things are
		too difficult"
Environment	- Outside	
	- School garden	
	- Kitchen	

	- Assembly	
Events	- Shows	
	- Sports Day	
Opportunities for responsibility	- Committees	
	- Going out for lunch	
Trips	- Museum	
	- Forest schools	
	- Italy	

In the community

Key areas	Details	Quotes
People	- Friends	
	- Family (Mum, Dad, siblings)	
	- Neighbours	
Organisations	- Beavers	"I used to go to Rainbows,
	- Guides	Brownies and now Guides to
		make me a better person"
Faith groups	- Church	"It is our religion"
	- Mosque	"I like going, I get to learn some
		other stuff about my religion"
Resources	- Cinema	"It has books from a long long
	- Library	time ago. Stuff that teaches
		things and stuff for fun"
Media	- You Tube	'How to cake it' channel
	- Linguiscope	'Most amazing top tens' channel
	- BBC Alba	
	- Websites	
	- Radio	
Learning opportunities	- Language classes (e.g. Mandarin,	
	Arabic)	
Opportunities for responsibility	- John Muir Trust	"Helping others in the community
	- Helping out	helps you feel better"
Personal feelings/health	- Curious	"Your brain is stronger, you know
	- Focused	a new thing"
	- Energetic	
	- Secure	
	- Being active	
Miscellaneous	- A break every hour	"Learn yourself- teach yourself
	- Teach yourself	how to cook"

Top preferred ways to learn

	Quotes
Trips	"Learn a lot, history of where you have gone"
	When you experience something new it helps you remember"
	"Helps with languages"

	"You know about building for projects"
Learning/teaching approaches	"Learn more when it is fun"
	"It's fun, you remember it"
Media	
Clubs	
People	"Supporting people can help them"

Key areas	Details	Quotes
In school	- Numeracy and literacy	"Talking at my table, they distract
	- Noise	me", "You can't think if you feel
	- Class size (not too large)	distracted"
	- Distracting pupils	"Frustrating if things are not
	- Resources	explained enough"
	- Subjects available	"If you are on your own"
	- Temperature	"Teachers that pick you out to be
	- Repetition of work	bad"
	 Understanding (pupils') 	"If you're unpopular" "can't
	- Support from staff	concentrate because you are
	- Staff that don't tell/explain/pick	thinking about it"
	you out	"Having enough time", "if it
	- Bullying	moves too fast" "Might need to
	- Time	speed up"
At home	- Homework	
	- Social media	
	- Family issues	
	- Bereavement	
	- Problems at home	
	- No help	
	- Conflict between hobbies,	
	homework, faith activities	
Additional Support Needs	- Dyslexia	"You and your parents may not
		know"
Personal/pastoral	- Not having anyone to talk to	"Feeling upset if it is too hard"
	- Pressure	

What we have done around this in school

Key areas	Quotes
Human body	"We learned how to say the body parts in school" "We did the
	human body and in Scottish"
Water cycle	"We done science on the water cycle and experiments"
Stars	
Climate	
Friction	
Experiments	"Non Newtonian fluids" "We used a bottle, water and mints and
	cola" "We used a light bulb, wires and a switch"
Trips	'Science Centre"
Didn't do it	

How we did this

	Quotes
Research using ICT	
Human body kit (mannequin)	"Stethoscope – listen to heartbeat"
Experiment resources	"We used water, vinegar and jelly" "We used tea, salt, sugar and
	plastic cups" "We used water"
Film	
Powerpoint	
Resources	"Microscope" "Bunsen burner"
Staff	"My teacher helped"
My brain	

What we enjoyed

	Quotes
Using the internet	
Human biology	"Discovering new parts of the human body" "I liked when we were touching the lungs and hearts and liver" "I liked holding the heart, lungs and liver"
Learning	"Learning something new blows your mind sometimes"
Mixing chemicals	
Experiments	"Finding new experiments"
General enjoyment	"Science is exciting" "Science is super" "It was fun" "Yes I loved it and enjoyed it so much" "I liked it because it was fun to do and when I was little I always wanted to do science" "I thought it was awesome"

Any difficulties

	Quotes
Remembering	"Learning so much, can forget" "It was hard because we were
	learning so much and I just forget"
Literacy	"Words are complicated"

Book based learning	"Books are boring"
Problem solving	"Sometimes it gets more difficult"
The theory behind it	
Concentration	"Not concentrating"
Experiments	"Maybe some people don't like fidgeting with liquid and bottles"
	"I found it hard to put my finger through the valve"

What we have done around this in school

Key areas	Quotes
Research	"Olympics" "rainforest" "curling" "Scottish Wars"
Camera on school trips	
Smartboard	
Top Marks	"We play maths games on Top Marks"
You Tube films	
Programing	
Coding	
Design	"Made a website"
Stop animation	
Pen drives	
imovies	
Not done it	

How we did this

	Quotes
ICT suite	"Computer suite and we work on our own" "We went to ICT and we
	researched about the Scottish wars of independence" "we used the
	internet and Microsoft office"
Education City	
ipads	
Headphones	
Playdough	
Scratch	
Individually	
Teachers and parents	
Trips, visitors	"Somebody comes in and makes buzzers"

What we enjoyed

	Quotes
General enjoyment	"It was good because it was fun and interesting" "Play through research"
Learning	"I enjoy playing (maths) games because it is fun" "I enjoy playing hit the button"
Stop motion	
ipad time	
Teacher help	"The computing teacher is great"
Helps with learning	"You get to learn the Olympic names"
Practical work	"I enjoyed making the design for pencil holder"

Any difficulties

	Quotes
Practical issues	"Crashing" "Wifi" "No computer at home" "Sometimes slow on the
	internet"
Specific skills	"Copying and pasting" "Saving it correctly"
Links to inappropriate game/site	
Support	"Asking for help" "Needing help but not able to ask"
Remembering	"Remembering the steps"
	"Remembering how to find different things"

What we have done around this in school

Key areas	Quotes
Building	"A snowman", "pirate ship", "In P4 we made a castle out of
	cardboard", "3D shapes", "On computer we made a castle"
Egypt - pyramids	"We were learning about ancient Egypt", "We were learning about
	pyramids"
Practical work	"A pencil holder", "A coat hook"
Trips & visitors	"BAE talk" "We made butter at Vikingaar"
Nothing too much	"Health and safety"

How we did this

	Quotes
Worked in group	"My friends helped me learning about pyramids"
Teacher help	"Just listening", "It's really fun with our science teacher" "when we
	were making our pirate ship the teacher helped and with the castle
	the teacher helped"
Smartboard	
Books	"We learned about Egypt from books"
Listening	
Our brains	
Trips	"This guy on a screen at Dynamic Earth"

What we enjoyed

	Quotes
General enjoyment	"I enjoyed it because it was really fun and awesome"
	"It's really interesting and you learn lots"
	"It's fun" "loved it!" "It was fun and different"
Learning	"Finding out stuff"

Any difficulties

	Quotes
Used different media e.g. snow	"The straws kept bending" "making a snowman was difficult" "It
	kept falling down and it was hard"
Own confidence	"That I'm not good at it"
Specific skills	"Cutting, mixing, fitting" "Trying to get a correct measurement"
	"Trying to mix gases correctly" "Cutting things correctly"
Remembering	"Sometimes just forgetting stuff" "Remembering how to use these
	things"

"Maths is the most important as it helps with everything" P3/4 Pupil

What we have done around this in school

Key areas	Quotes
Specific skills	"Adding, subtracting, dividing, multiplying"
Fractions	
Decimals	
Algebra	"I love algebra, because it's a mystery"
Statistics	
Angles	
Place value	
3 D objects	
Money	"We did money"
Time	
Weight	
Times tables	
Tally tables	"Last year we done tally tables"
Measurement	
Data handling	
'Sumdog'	"Maths games that your teacher puts to your level"
'Top Marks'	"We were learning about Top Marks"

How we did this

	Quotes
TJ text books	
Pencils, rulers, rubbers	
Number line	"it is good to help to use a number line"
Trundle wheel	
ipad	
Teacher's help	"Teacher helped if we were stuck"
Bar/pie charts & line graphs	
Number square	
Cubes	
Mental maths challenge	
Friends	"I use my friend's brains"
Practice	
Calculator	
Whiteboard	
Outdoor learning	"Outside to measure trees"

What we enjoyed

	Quotes	
Using it in sports	"I liked maths when using it is sports and some time I like to do	
	times tables"	

Times tables		
Working with others	"I like working with others, two brains are better than 1"	
Addition		
Mental maths - competitive	"Sumdog – competitive and gets you to work much harder"	
Problem solving		
Learning	"It gets your brain working" "I like learning more" "I liked that it was	
	tricky because then it helped me learn"	
General enjoyment	"It was really fun in Maths and other subjects that we use Maths"	
	"We done dividing in maths and I liked it"	

Any difficulties

	Quotes		
Boring	"It was boring" "Maths is boring"		
Literacy/Numeracy	"Time in words is harder than maths in numbers" "It is harder in		
	words"		
Pace	"I want to get faster at mental maths"		
Outdoor Maths			
Understanding	"It's hard" "Algebra is impossible"		
Support	"Not having help"		
Remembering	"Seven times table – I forget, it's hard to remember"		

- Builder (football stadium)
- Oil and Gas engineer
- Mail person
- Engineer creates chips inside a computer
- Restaurant (waiter/waitress)
- University teacher
- Milk delivery
- Car wash
- Astronaut
- Scientist
- Software engineer
- Mathematician
- Boxer
- Surveyor
- Council teacher and education
- Machine maker
- Doctor
- Taxi driver
- Lego maker
- Youtuber
- Architect
- Wrestler
- Working in a shop
- Chemist
- Chef
- Nurse
- Reporter (online)
- Dice maker
- Pilot
- Game developer
- Engineer (building trains)
- Safety engineer
- Technician
- Architect
- Science teacher
- Computing teacher
- Music teacher
- Maths teacher
- Occupational therapist
- Physio
- Coach
- NASA worker
- Apple inventor
- Midwife
- Business owner (in a STEM industry)
- Optician
- Plumber

- Police Officer (problem solving)
- Game designer
- Mobile phone designer
- Computer programmer
- Sports scientist
- Lab worker
- Shop (PC World)
- Engineering
- Navy Seals (helicopter)
- Organise deliveries logistics
- Web designers content editors
- Medic
- Baker measuring
- Detectives finger prints
- Office worker
- Secretary
- Dentist
- Movies
- Electrician
- Build bridges
- In a bank
- Fence maker
- Animator
- Carpenter
- Administration
- Inventor
- Joiner
- Vet
- Mechanic
- Football
- RAF
- Working in McDonalds
- Army
- Lawyer
- Politician
- Neurobiologist
- Sewer cleaner
- Security
- Poo patrol
- Brain surgeon
- Film director
- Archaelogist
- Apple store
- Accountant
- Analyst
- Geology
- Radiologist

Surgeon (plastic)	IT computer
Participation worker	Project manager for STEM

Group 1

Job	Girl	Воу	Both	Quotes
Nurse	8	2	11	"A doctor is a boy and a nurse is a girl" "All nurses are ladies" "I went to see a nurse and I saw a boy" "Nurses are just girls"
Doctor	0	0	<mark>21</mark>	"A boy or a girl can learn and do the same things"
Astronaut	0	5	<mark>16</mark>	"Boys are faster to do it" "I have always seen and heard they are stronger" "Anyone can go into space, multiple people can go on a spaceship, I saw a movie"
Scientist			<mark>21</mark>	
Teacher			<mark>21</mark>	
Engineer	2	9	10	"Out of Edinburgh they are making a new bridge and I saw men and women" "Boys are stronger" "Men get trained to do it" " I saw people, a girl going into work" "Boys are stronger than girls it depends what strength you are"

Group 2

Job	Воу	Girl	Both	Quotes
Astronaut	0	0	<mark>21</mark>	"Because it doesn't really matter, I've seen a couple of films
				with boy and girl astronauts"
				"Its just up to themselves"
Doctor	1	1	<mark>19</mark>	
Secretary	3	4	<mark>14</mark>	"Why would a man want to work in an office"
				"ladies are more organised than boys"
				"Boys can work computers better"
Sports	6	0	<mark>15</mark>	"Mostly boys like football and science"
Scientist				"Girls like sport, girls can be sporty as well"
Nurse	2	<mark>12</mark>	7	"Not many boys" "Lassies can be smarter than boys at
				secondary school"
				"My mum is a nurse and she works with a man who is a
				nurse"

Group 3

Job	Girl	Воу	Girl or	Quotes
			Воу	
Astronaut	0	<mark>6</mark>	5	
Doctor	3	2	<mark>6</mark>	"In the movies they are boys and girls"
				"All my doctors are women"
				"Word doctor sounds feminine"
				"Feminine doctors are nice and gentle and slow with you"
				"Men doctors are straight forward"
				"Men are stereotypically rough"
Nurse	<mark>9</mark>	0	2	"When you picture it , you picture the men as the head
				doctor and the women as a nurse"
				"I think it should be mixed because stereotypically they are

				weaker and should be doing the less important jobs"
Architect	2	3	<mark>6 & 1</mark>	"I know architects are male, but in my head a lady does
			not sure	sitting and drawing it's not like labour"
Builder	<mark>9</mark>	0	1	"I've never seen a female builder"
				"Even in the movies"
				"I'd like to say it would be mixed"
Teacher	4	0	<mark>6</mark>	"In the primary there are more women"
			_	"In high school it is a lot more mixed"
				"Secondary is harder men are seen as 'cleverer' 'smarter'"
				"Male teachers do science, maths and computing most of
				the art is female"

Group 4

Job	Girl	Воу	Girl or	Quotes
			Воу	
Astronaut	0	6	<mark>10</mark>	"I've never heard of a girl going to space"
				"No women has ever gone to space"
Doctor	0	0	<mark>16</mark>	
Nurse	3	0	<mark>13</mark>	
Builder	n/a	n/a	n/a	"Do you see any girls on a construction site"
				"Normally when people you think builders or joiners but
				there are some roles that women specialise in"
Primary	1	0	11	
Teacher				