

# STEM Nation Award

## Evidence

### Applicant details

- Kirkintilloch High School
- East Dunbartonshire Council
- 8337632
- Angela McLelland
- March 2023





Education Scotland  
Foghlam Alba

### Setting profile


We are a co-educational, non-denominational six year comprehensive school that serves Kirkintilloch and the surrounding areas. We strive to deliver high quality inclusive learning experiences for all of our learners as they dream big, work hard and show kindness.

We have a diverse catchment area with 39.3% of our pupils in SIMD 1-3.

Our current roll is 724 and projected to increase over the next few years.

We have a core staff of 94 FTE divided between singular departments.

We work closely with our 6 cluster primaries to ensure a smooth transition for our young people.



STEM Nation Award

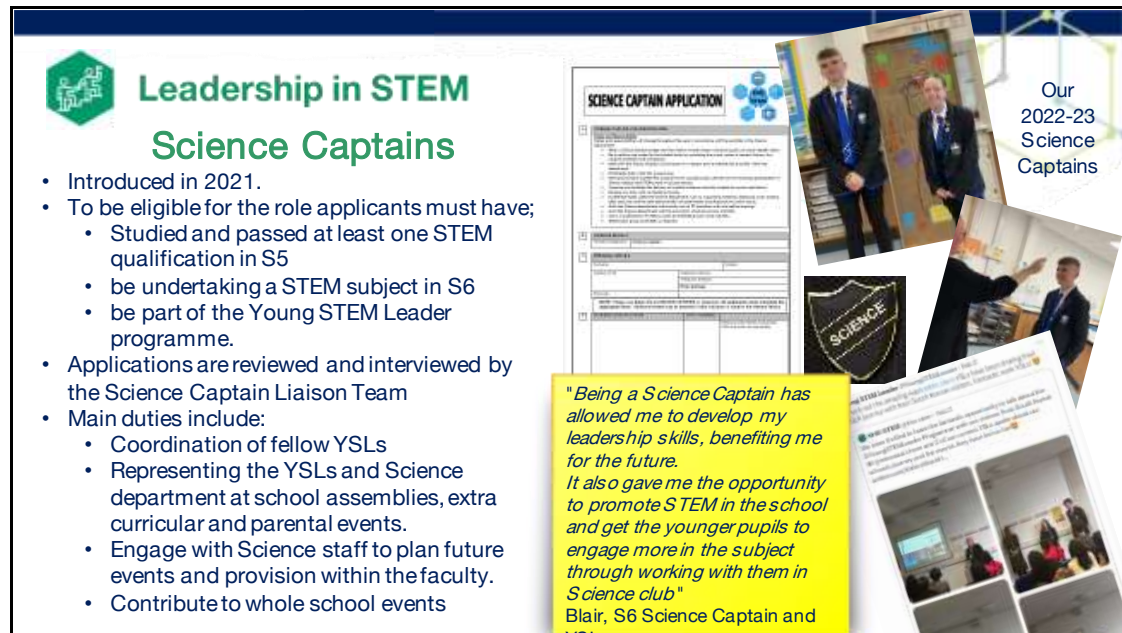
**Leadership in STEM**

## STEM School Improvement Group

- Lead by Principal Teacher of Biology and Chemistry Angela McLelland
- The group comprises of 10 members of staff with representation across Biology, Chemistry, Physics, Mathematics, Home Economics, Computing and Technologies.
- The group meets as part of the school calendar to discuss our provision, identify priorities moving forward and to plan future STEM events.

- During our first meeting we used the self evaluation framework to identify gaps in our provision and discuss solutions. We aim to unite the different STEM departments to encourage more interdisciplinary working and develop a cohesive approach to STEM delivery in the school. This could include working in partnership to deliver curricular options and whole year STEM events. There was an overwhelming feeling that we 'do a lot' for STEM but don't necessarily tie it together – pursuing this award is a way for us to pull together the different activities and actions carried out by the separate STEM events. For the first time this year STEM was added to the school improvement plan.

## Slide 3



### Leadership in STEM Science Captains

- Introduced in 2021.
- To be eligible for the role applicants must have;
  - Studied and passed at least one STEM qualification in S5
  - be undertaking a STEM subject in S6
  - be part of the Young STEM Leader programme.
- Applications are reviewed and interviewed by the Science Captain Liaison Team
- Main duties include:
  - Coordination of fellow YSLs
  - Representing the YSLs and Science department at school assemblies, extra curricular and parental events.
  - Engage with Science staff to plan future events and provision within the faculty.
  - Contribute to whole school events

*"Being a Science Captain has allowed me to develop my leadership skills, benefiting me for the future. It also gave me the opportunity to promote STEM in the school and get the younger pupils to engage more in the subject through working with them in Science club"*  
Blair, S6 Science Captain and

Our 2022-23 Science Captains

Our Science Captains are a pivotal leadership role with the faculty. The application process begins in August after the selection of school captains. Applications are distributed via the YSL MS Team and interviews follow shortly after. Pupils are asked to prepare 3 questions in the following areas:

- What they will bring to the role of Science Captain
- What events and activities would they like to lead on as a Science Captain
- How they would promote Science to our learning community

They work in partnership with Science staff and are actively involved in planning events, e.g. the primary transition events and visits, STEM club, options choice events, and also provide a valuable conduit for pupil voice, empowering other learners in our school community. This year we had a group of teachers visiting from South Korea in conjunction with Strathclyde University School of Education and they presented on the YSL programme and what it meant for them to be part of it. We are very proud of them!

## Slide 4

### Leadership in STEM

### Young STEM Leaders

- We were fortunate to be a pilot school for the YSL level 6 programme and it has been a prominent part of building STEM capital within our school community.
- Our YSLs lead so many different activities and STEM events including:
  - Planning and delivery of a weekly BGE Science club and Maths club
  - Assisting in classes across different STEM subjects including science, engineering, maths and computing.
  - Co-delivering the P7 Rainbow Science events as an integral part of the P& Transition programme
  - Working with YSLs from our cluster primaries to train them to deliver experiences there.
  - Visiting younger classes to promote STEM subjects at option time
  - Building STEM capital in our cluster primaries by training up teachers and primary pupils to deliver STEM activities

"I loved being a YSL because I was able to develop my leadership skills and gain confidence working with young people"  
Rhys, S6 YSL

"I like Science Club because it's really fun and I would recommend it. The 6th years make it funner"  
Harry, S1 Science Clubber

This year we have 12 YSL who come from various STEM backgrounds including, Biology, chemistry, physics, computing and maths. 2 members of staff – Rachel McDermott and Kirsty Dwyer – lead the programme in the faculty and all 12 are on course to achieve their award. They are such an important part of our faculty and enrich the STEM experience of pupils and staff in our learning community as well as developing themselves as leaders.

**Leadership in STEM**

**Whole school STEM events**

**British Science Week**

- During Science Week pupils take part in STEM themed activities including:
  - BGE completing the IET Faraday Challenge 'Mission to Mars' with the assistance of STEM ambassadors and STEM teaching staff
  - Whole school STEM themed registration activities
  - Special in class activities for Science classes

**Science Week Event**

**Science Week Registration activities**

**Biology Week**

- During Biology Week Biology and Science pupils from S1-6 get the opportunity to take part in lots of different Biology themed activities to enthuse and inspire them.

**Biology Week 2022**

3<sup>rd</sup> - 7<sup>th</sup> of October 2022

STEM subjects use whole school events to publicise the enjoyment and diversity of careers within these areas. One event in Biology week is challenging stereotypes where the children are exposed to different careers that biology can lead too – far more than just doctors and nurses! We have found that through these sorts of events we have a better gender balance in biology subjects (than is traditional) as many boys can now relate biology to their future career – more on this is in the equity section.

British Science Week is celebrated with a whole year group event for S1 where they undertake various STEM challenges. Ww also take over registration activities that week and have several activities including challenging stereotypes.



 **Leadership in STEM**


## Building STEM capacity in our Learning Community

- We have used the YSL team at KHS to build STEM capacity and confidence in our learning community.
- 3 YSLs recently visited Gartconner Primary to empower P7 pupils and staff on how to deliver a STEM lesson on germs.
- Due to this visit, the P7s YSLs and their teacher will deliver this to P4.

*" We are working in partnership with the Kirkintilloch High School YSL team and invited them to work with our own YSL team to model how to deliver a lesson relating to STEM. The pupils from KHS planned and prepared an engaging lesson relating to germs and their transmission. Children at Gartconner loved the opportunity to learn from the YSL S6 team who were enthusiastic in their approach. The young children that participated in this lesson have all benefitted from the experience and it has helped to ease anxieties for the P7 pupils regarding the transition to secondary school."*

Loren Rolinsky P7 teacher Gartconner Primary


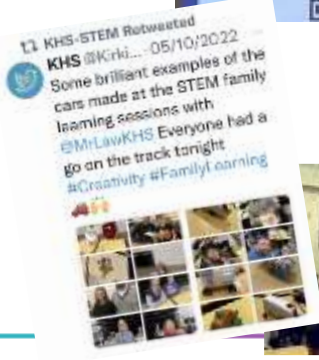


We also use our twitter account @khs\_stem to set primary STEM challenges and have had good engagement with this from our cluster primaries. This was especially true in lock down with Rachel McDermott setting challenges that could be completed at home and encouraging children to post videos or photos of themselves doing the challenges. Science staff (Rachel McDermott and Angela McLelland) have also delivered training and support to EDC colleagues wishing to undertake the NPA Criminology level 6 – currently taught and delivered by Rachel McDermott. Many of the resources used by other schools were developed here at KHS and we wrote the assessments for two of the outcomes within the level 6 module.



## STEM family learning

### STEM Family Learning Programme

- Family focused programme which aims to engage families with STEM based activities and raise their STEM capital.
- Over 5 sessions families worked together to develop their problem-solving skills and solve a real-life STEM problem.
- Families have received a CREST Award
- Around 30 families took part and completed the programme



You may wish to use the notes area to provide a written narrative to support your evidence.




## STEM family learning

### STEM Family Learning Programme

- Parent and Pupil Feedback:  
*“Enjoyed being invited to take part in the sessions with my son. Interesting subject and glad the school is supporting further learning in this area”*
- “10/10 really enjoyed the Science STEM challenge”*
- “Great fun being able to work with my young person in the school on a 1-2-1 basis”*
- “Great for kids to build confidence and learn new things. Also working as a team with family members is great.”*



You may wish to use the notes area to provide a written narrative to support your evidence.



## STEM family learning S1 Showcase Evening

- P7 learners and their families were invited to meet some of our pupils, tour the school and participate in classroom activities from all curricular areas.
- 144 families attended the event equating to 363 people visiting the school that evening.
- Over 80 of our S1, S2, S5 and S6 pupils supported the evening by acting as guides escorting groups of parents to their different subjects and leading activities in mini lessons
- STEM subjects featured heavily in the timetable giving P7 pupils and their families a taste of what they will enjoy as S1 pupils.

5.30pm- Prefects and 56 leaders gather to welcome and sign in families. PTBs to support. (early arrivals will be given the opportunity to browse the displays)

5.30pm- BGE helpers to arrive and head to departments where they are working.

6.00pm- Welcome in hall from Mrs Daniel, S1 and 56 speakers


6.15pm- Families divided into groups to follow timetable- guided

6.20pm- 3x 20 minute lessons (including travel time) to allow o

7.20pm- Final bell of the evening. Families invited to browse d

make their way home.

Group	Session 1 5.20-6.40	Session 2 6.40-7.00	Session 3 7.00-7.20
A	Design GD44	PE Games Hall	English PD48
B	Design GD43	PE Small Gym	Music GD87
C	PE Games Hall	Design GD45	Science PD18
D	English PD48	Design GD46	Science PD18
E	English PD27	Science GD42	Design GD46
F	Science GD23	Drama GD85	French PD74
G	Science GD18	French PD74	Geography PD20
H	Drama GD85	Geography PD20	Art Art Breakout Space
I	French PD74	Art Art Breakout Space	Computing PD56
J	Geography PD20	Computing PD56	Design GD43
K	Art Art Breakout Space	History PD11	Home Economics GD53
L	Computing PD56	Home Economics GD53	PE Games Hall
M	Maths GD30	Computing PD54	PE Small Gym
N	History PD11	Science GD18	Music GD85
O	Home Economics GD53	English PD48	PE Fitness Suite
P	PE Games Hall	Music GD85	Maths GD33
Q	Small Gym	Music GD87	Maths GD33
R	Maths GD33	PE Fitness Suite	Computing PD54
S	Music GD87	Maths GD33	Drama GD85



Mr Speirs @...13/10/2022  
P7s here at KHS tonight. D+T department proving it's a firm favourite from the word go. Got to hook them early!

H.E Dept @...13/10/2022  
Primary 7 open evening @KirkstallCerts are you ready to test your senses?? what's in the box? Put your hand in if you dare!

This was a fantastic event and a jewel in the transition event schedule. The event allowed departments from all curricular areas to showcase typical activities undertaken in S1. You can see from the timetable above that the majority of mini lessons were offered by STEM subjects. This was a fantastic way of getting parents into the school building and giving the Primary 7 pupils a chance to tour the school and classrooms with their families. Parents and children alike were asked to participate in activities and in Science all 3 sciences provided activities for the event.

**STEM family learning**  
**Study with the Sciences**

- Event took place on the 21<sup>st</sup> of March as a support for senior pupils across all 3 sciences.
- Parents were invited to participate in a study skills session to help support their child at home in the run up to the SQA exam.

This event was open to the parents and carers of all pupils currently studying a science in SP. However, certain pupils that we felt required extra support were targeted with group calls and emails home to promote attendance. This group included pupils from SIMD 1-3, families with lower STEM capital (who would perhaps struggle to support study habits at home), ASN pupils or families of pupils who did not attain as expected in their prelim.

**STEM family learning**  
**Big Cook, Little Cook**

- Home Economics are another STEM subject that are reaching out to parents through their family cooking sessions “Big Cook, Little Cook”
- This event is planned to take place in April and May.
- To widen access the classes will be provided free of charge and are open to all parents and carers regardless if the pupils takes home economics.

Learn how to cook delicious affordable healthy meals to support your families well-being

**BIG COOK LITTLE COOK**

Classes are free, friendly, and suitable for all parents and carers, no matter how confident you are!

Home Economics Department  
Kirkcaldy High School  
Times: 4.30pm - 5.30pm  
Dates: 20th April / 1st May / 15th May

Booking details to follow.

This event is planned for April time and I have included the poster in the slide. It will be open to all but some families will be targeted to attend by sending home specific invites or calling to incite them personally.

**Employability and STEM partnership working**

### Curricular Partners

- We have worked with 16 different partners in the past two years to deliver a range of STEM experiences and have become an integral part of STEM education at KHS.
- STEM events are spread through all year groups.
- This gives us pupils a chance to be exposed to different STEM careers and build their employability skills.

Logos included: Skills Development Scotland, sserc, EngineeringUK, University of Glasgow, Royal Society of Biology, QMS, STEM Learning, SCDI (Scottish Council for Development and Industry), GLASGOW SCIENCE CENTRE, NCL (NEW COLLEGE LANARKSHIRE), SCOTLAND FOOD & DRINK, YESCA (Young Engineers and Science Clubs Scotland), DYW (Developing the Young Workforce), University of Strathclyde Glasgow, and IBM.

Different STEM departments have build links with different partners, for example:

**Science** works in partnership with Engineering UK, SCDI, STEM learning (specifically the STEM ambassador programme) and YESC to deliver whole school STEM events such as Energy Quest for S1/2, our BGE STEM event and Biology Week

**Home Economics** works in partnership with QMS and SF&D to deliver the Street Food Design challenge for S3 and they also provide tickets to the Royal Highland Show to see the food industry in action.

**Computing** works in partnership with colleges to deliver practical's for the senior computing courses, e.g. a hacking practical in Cyber Security.

**Biology** works in partnership with the Glasgow Science Centre and universities to deliver a PCR experience for our higher classes and SDS and DYW to develop employability skills in Health Sector pupils. We also work with RSB for Biology Week.

While I have included 16 partners there are probably more!

## Slide 13

**Employability and**

S4 pupils developing horticulture skills with one of community partners

S1 maths pupils relating studying maths to future careers options during STEM ambassadors week

S2 pupils taking part in Energy Quest to learn about sustainable energy and find out about associated engineering careers

S5&6 pupils taking part in the STEM Futures in Healthcare Science to learn about careers in health care science

S5 pupils at a PCR day at the University of Glasgow learning about PCR and associated degrees and pathways

### Energy Quest S2

This event is publicised to all S2 Science classes and a list of interested children are collected by the class teacher. The team organising then sieves through the list to select children based on SIMD or experience of care so that this group can be targeted. This is done to provide easier access to STEM opportunities for children from disadvantaged backgrounds and expose them to STEM activities and careers at influential points in their school career.

### Level 4 Horticulture

This is delivered in partnership with the Well being and Home Economics departments. Pupils are nominated for this course by their guidance teacher and children that struggle in a traditional school setting. Including horticulture is a fantastic way to engage them with practical skills and expose them to a practical hands on career. We partner with the local Community garden and the class visits regularly for skills sessions.

### STEM futures

This is an annual event run in conjunction with our partner Glasgow science centre (and Queen Elizabeth hospital). This begins with a general introduction to health care science and then routes into health care science are shown using videos interviewing staff at the Queen Elizabeth labs about how they got into that career. Pupils 'race' against each to complete bioscience tasks and reach the top job within a healthcare lab.

### PCR day

This is offered in conjunction with our partners University of Glasgow and Glasgow Science Centre. The day begins with a careers session where 3 members of the university talk about their job roles, how they got into it and what they like about it. We then spend the day in the labs carrying out practical techniques and solving a problem. During the day, we also had the opportunity to meet staff from different departments, such as medicine and vet, and pupils had the chance to talk to them about entry pathways and qualifications.

**Employability and STEM partnership working**

## Skills for Work and NPA Courses

Skills for Work and NPA courses that explicitly develop employability skills have become an integral part of our STEM learners pathways.

At KHS we offer:

- National 5 Skills for Work Health Sector
- National 5 Skills for Work Energy
- National 5 Skills for Work Childcare
- NPA Cyber Security (level 5)

SfW N5 Energy class meeting engineers and taking part in a workshop at Whitelee wind farm

Interview prep and feedback from a SfW N5 Health Sector pupil – interviews conducted in conjunction with our SDS careers advisor

SfW N5 Health Sector pupils learning CPR

H.E Dept @... 08/11 Thank you to @beven who visited the Childca class @KirkintillochHS t us about the Baby Box initiative @parentclubscot

Skills for Work courses are an important and increasingly popular senior pathway. They are delivered in partnership with various partners, for example above you can see the S4 N5 Energy class developing creative thinking and problem solving skills on a visit to Whitelee Windfarm, the S5/6 Health Sector class displaying their impressive CPR skills after working with the British Heart Foundation and the S4 Childcare class working with Parent Club Scotland to learn about baby care and support for new families.

A prominent and important part of the Health Sector course is when pupils have the opportunity to go through mock interviews for one of their outcomes. This is delivered in partnership with Shona Deans, our school's SDS career coach. This is what she had to say about this part of the course:

*"For the last couple of years I have worked in partnership to support the Health Sector Nat 5 class around developing their employability skills and awareness. Supporting the Career Education Standard Entitlements by assisting pupils to be clearer of their skills and strengths and how these relate to the workplace. I delivered an informal lesson on interviews to pupils increasing their awareness of the purpose, different types and how to prepare and succeed – referring them to various sections on the My World of Work website.*

*At the start of every academic year Skills Development Scotland validate our service offer to pupils with the Guidance team which then identifies my caseload and who to provide more intensive support to. I was able to liaise and work in tandem with Miss McLelland and for continuity worked with the pupils who were already on my caseload and assisted them further – delivering a mock interview to further explore their ability to perform at future interviews. This partnership enabled innovative collaboration by engaging with pupils in Senior Phase and providing them with greater clarity about their skills in relation to opportunities out there and most importantly to develop understanding of the responsibilities and duties involved in their chosen Health Sector Careers."*

**Employability and STEM partnership working**

### Work Experience

- We actively encourage pupils to gain work experience in STEM fields and advertise opportunities across STEM department.
- We have had pupils go to:
  - Girls into engineering
  - NHS Next Gen
  - Edinburgh Zoo
  - Whitelee Wind Farm
- We also have staff participating in the 2023 Scottish STEM Placement Programme

**Work Experience** - Numerous pupils have completed virtual work experience through programmes promoted in school, e.g. the Speakers for Schools and Girls into Engineering programme. We also have pupils applying for the Science Insights programme this year. Often work experience opportunities are created using family networks and this programme alleviates that barrier for our young people many of whom do not have family contacts to secure this sort of opportunity. We support all pupils to apply for work experience and make sure to challenge gender/LGBT+ stereotypes when promoting work experiences and careers. 2023 Scottish STEM Placement Programme – we have a member of staff currently in the process of applying for this programme. We are hugely excited about this and after attending the information session we are praying that she is successful! The company involved is keen to establish long term working relationships with schools that participate in the programme and we have already approached them about how that would look in practice. They have said they would love to welcome pupils into the labs to observe scientists at work as well as coming out to visit us in school. The closing date is the 24<sup>th</sup> of March 2023 so we should find out quickly if we are successful!



 **Employability and STEM partnership working**

## Competitions

- The school takes part in numerous external competitions and events each year in addition to the BGE Science Week STEM event held in school each year.
- We find this to be an exciting way for children to build real life employability skills as well as learning about different careers roles in different STEM industries. expose our pupils to new job roles in industry.

**scdiYESC @...** · 19/05/2022  
Communicatoon and problemsolving at our teamwork challenge from @KirkintillochHS

**Mr Speirs @...** · 09/10/2021  
KHS S2 attended the EDC Faraday Challenge earlier this week and did a fantastic job! Great day with a fantastic design and presentation by the team. Enjoy the holiday everyone! #KHS #IET #EngineeringScience #designandtechnology

**Mr Speirs @...** · 19/05/2022  
Great fun out with the KH Engineering Club today at EEP Robotics Challenge. Thanks to all the sponsors and well done to the winners! @scdiYESC @raisingrobots @KirkintillochHS

**STEM LEARNING**

You may wish to use the notes area to provide a written narrative to support your evidence.

**STEM curriculum and learner pathways**

### Transition Points

- Planned transition events make sure the STEM subjects represented at key transition points.

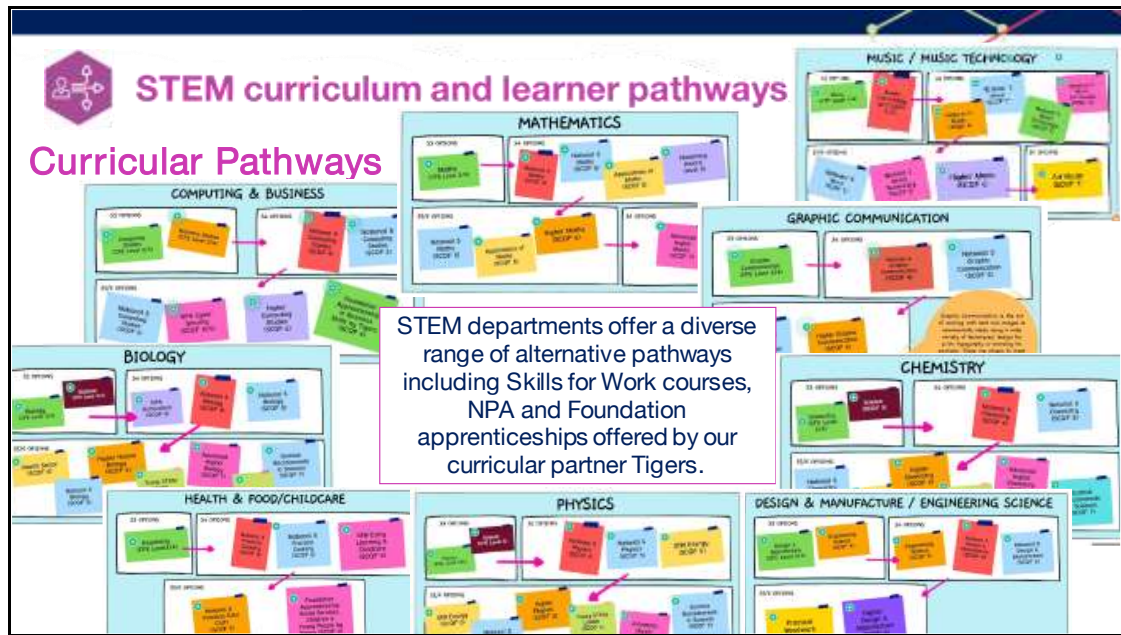
**KHS @Kirkin...** -14/12/2022  
We've been welcoming our P7 learners to science all week as part of our #Transitions programme. Thanks to Mrs McLelland, team science and the Young STEM leaders for all their hard work  
@KirkyChemistry @khs\_stam

Material used to promote Biology as an option choice in S3 at the annual options evening

All cluster primary schools participate in a Rainbow Science session as one of their first in school events

Computing and Biology being promoted at a S2 into S3 'Be all you can be' transition events

Highlighting the vast array of options within STEM subjects is really important and staff are actively involved at key points in a pupils school career. Further pathways are promoted in class to all years as well as staff participating in whole school events such as Choosing your future.



Please zoom in on each image to see what the different STEM subjects offer.

**STEM curriculum and learner pathways**

**Inclusive STEM pathways**

- To ensure all our learners experience success in Science we are widening access by introducing a National 3 Science course in S3.
- This will be offered as an alternative to discrete Biology, Chemistry or Physics traditionally offered in S3.
- The course will be publicised to all S2 classes and will feature on Biology, Chemistry and Physics Thinglink options pages.

The diagram illustrates three subject pathways: Biology, Chemistry, and Physics. Each pathway is represented by a grid of colored boxes indicating different course options. A yellow starburst highlights a 'National 3 Science' option within each subject's pathway, indicating its inclusion as an alternative to the traditional discrete science courses.

- 47% of our current S2 cohort at KHS have an additional support need that may impact their learning (the national average is 32.2%). We also have a significant proportion of our learners working at first level for literacy and numeracy. In S2 these pupils are extracted from traditional English and Maths classes and placed in a supported literacy or numeracy class that is taught by our one of Support for Learning teachers. This teacher is a primary school teacher by trade and replicates a primary school approach to support our pupils develop their literacy and numeracy skills. The pupils are in traditional classes for the rest of their timetable where they are offered in-class support by our fantastic support for learning team if possible. In S2 Science we use a range of differentiated materials to support these pupils access the curriculum and so far we have been successful with this approach. However, as this cohort moves into S3 we have realised our traditional offer of taking at least one of the discrete sciences in S3 will not support their success as they move up the school and we risk losing their enthusiasm and interest in Science as they come up against increasingly difficult literacy and numeracy barriers. In S3 our science courses focus on level 4 outcomes with some N5 content being touched on to give a favour of S4. With the high number of pupils working at first level for literacy and numeracy, this is simply not suitable for them.
- This year we are working very hard to prepare a National 3 course for this cohort as a more inclusive alternative. This will be offered within the biology department and the PT Biology is working in conjunction with the DHT with curricular responsibility and the PT of Support for Learning to identify children that will follow this pathway. We are planning to primarily target learners that are in both the supported literacy and numeracy class. The teaching style in this class will follow more of a primary model with the use of concrete teaching materials and an emphasis on group activities,

project work and practical experiments. As the cohort move into S4 we hope that many will opt for the level 4 NPA horticulture already offered in the biology department but we are also considering launching the level 4 NPA in Science and Health if there is a demand for it. It's really important to us that this group of learners are empowered to choose their pathways and the class will be actively involved in planning their future science pathway.

**STEM curriculum and learner pathways**

**Innovative STEM pathways**

- NPA Criminology with Forensic Science**
- S3 Engineering Science**
- NPA Cyber Security Level 5**
- S3 and N5 Music Technology**

The world of STEM is fast paced and quick to change. To reflect this, STEM subjects have expanded their pathways to include several new innovative options.


**NPA Criminology with Forensic Science** – Offered as an IDL option with the Chemistry and Psychology department. Currently offered as a S5/6 option. First introduced in 2021/22 as a S6 option as an IDL option between the Chemistry and Psychology departments. Pupils opting for this undertake the level 6 NPA in Criminology (which contains two psychology units and one forensic science unit) with an additional level 5 Forensic Science module. This year the popularity of the course has meant we have increased to two classes and also opened this up as a S5 option as so many of them wanted to take this. We are building STEM capacity within our authority and orchestrated CPD events for colleagues who are looking to follow our example and introduce this award. We were the first school in Scotland to offer the level 6 Forensic Science unit and developed the SQA assessments for this unit

**Engineering Science** – 2022/23 is the first year that we have offered this subject at KHS. It has been developed and taught by the technical department. It is proving a popular option with projections looking at increasing to two classes next year. Through investigation pupils develop their design, problem solving and construction skills in an engineering context. This courses also delves into the world of engineering and how it impacts our society. Many learners take Engineering Science in S3 as a 'package deal' with physics and maths, emphasising the link between STEM subjects

**Music Technology** – This course is offered by our music department and is currently offered in S3 (level 3/4) up to S4 (National 5). There are currently two classes and the department are looking to expand this option into senior school by offering it as a N5 for S5/6 next year. Pupils develop skills in the use of music technology hardware and software to capture and edit sounds for radio, animations, gaming, films and music.

**Cyber Security** – This course is offered by the computing department and is offered as a senior skills for work course. It is a National 5 course. There is one class and the school has

made links with colleges in the past to offer practical aspects of the course to life for pupils, e.g. hacking practical. Pupils develop their employability skills alongside their digital literacy skills as they are guided through the course.


 **STEM curriculum and learner pathways**

### Pupils in STEM pathways

- Pupils are encouraged to take complementary STEM subjects and are given time with their guidance teacher and the careers advisor to select pathways that will support their interests and future aspirations.
- All pupils must select at least one Science. Many pupils opt to take an additional Science with a number of pupils opting for all 3 discrete sciences in S3.
- Another combination that is encouraged is the selection of physics and engineering Science with half of the class having this combination on their timetable.


**S3 UPTAKE - MULTIPLE SCIENCES**

• 1 Science • 2 or 3 Sciences



**S3 ENGINEERING SCIENCE AND PHYSICS UPTAKE**

• Engineering Science Only • Physics and Engineering Science



Numbers for pie chart

Pupils only taking one science – 74

Pupils taking two or three sciences - 56

Engineering Science Only – 50%

Physics and Engineering Science – 50%

**Equity and equality in STEM**

**Equity for all**

- KHS was recently awarded our bronze certificate as a chartered LGBT School by LGBT Youth Scotland
- We are also a Rights Respecting School and have recently been awarded our Bronze awards
- Prominent part of our school identity and ethos
- We are widening our pathways in Science to be inclusive with the introduction of the N3 Science pathway for S3 learners\*

*Jordan McG... - 15/09/2022*  
Delighted to find out that we have just been awarded our Bronze LGBT Charter Award from @LGBTYS! This is down to the hard work of pupils and staff, in ensuring that @KirkintilochKHS is an inclusive and safe place for all LGBTQ+ members in our school.

*KHS @Kirkint... - 15/11/2022*  
Our wonderful Cultural Equality Team presented a cheque for £200 to @Refugeegee yesterday and enjoyed hearing all about their work in helping others. Thank you Clare for spending time with us! We loved your visit! 🌟👏 #ShowKindness #KinkyProud @scotrefcouncil @EDCouncil

*KHS @Kirkint... - 25/11/2022*  
We are delighted as today we were awarded our Rights Respecting Schools Bronze to Silver! We are proud as this recognises that we place the rights of our pupils at the centre of our practice. Well done to @P.T.Bradley & team for their great work here!

UNICEF UK RIGHTS RESPECTING SCHOOLS AWARD  
UNICEF

\*more detail on this in the curricular pathways slides.

## Equity and equality in STEM

### Challenging stereotypes in STEM

- LGBTQ+ History Month is celebrated across all curricular areas annually
- In STEM subjects, pupils focused on researching prominent LGBTQ+ scientists, technologists, engineers and mathematicians.
- Posters were displayed throughout the schools and our YSL took part in a Twitter take over.
- For 2023 STEM subjects we used resources from LGBT Youth Scotland to celebrate LGBT History Month and participate in a whole school IDL project

**Biology LGBT+ History Month Activity**

**Science LGBT+ History Month Activity**

**Celebrating Diversity in Science**

**LGBT+ 2023 HISTORY MONTH**

**KHS Maths...**  
One of our pupils Jamie Strachey was the first during WWII. Strachey Maths and Physics developed the "Pir Computer" to punch checks. [@KHS](#)

**KHS-STEM**  
Our first Young STEM takeover from Amber was the first American to enter space in 1968, at the age of 27. She is still to this day the youngest American to enter space at the age of 32. [@KHSSTEM](#)

**Couple 1**  
Andrew and James decide to have a baby  
Andrew has brown eyes and blonde hair  
James has blue eyes and blonde hair  
What are the possible genotypes for Andrew and James?  
**James**  
**Andrew**

**CURRICULUM INCLUSION**  
LGBT Mapping Activity  
Department for Education

Supporting our LGBTQ+ pupil and staff community is extremely important to us at Kirkintilloch. A member of the Chemistry department is in the working group that secured the Bronze level award and leads our approach in science.

**Equity and equality in STEM**  
**Widening access and challenging stereotypes in STEM**

- A group of pupils were selected to attend 'Step into STEM' with New College Lanarkshire and Developing the Young Workforce to explore different career pathways
- Senior pupils have successfully completed virtual work experience through Speakers for Schools programme.
- Programmes such as 'Girls into Engineering' for S3 pupils are publicised
- Stereotypes were challenged through registration activities in Science Week

**SPEAKERS for schools NHS**

*"It gave me a lot more knowledge on the different types of nursing and will help me when I am applying. I don't have anyone that I know that could have got me work experience so this was a good opportunity for me and will help me when I go to uni. I would recommend it to anyone that wants to do nursing."*  
 Ellie S5 Health Sector Pupil

**NextGen Nurse: Find out about nursing apprenticeships and more**  
 Employer: NHS  
 Age: 14-19  
 Industry: Healthcare

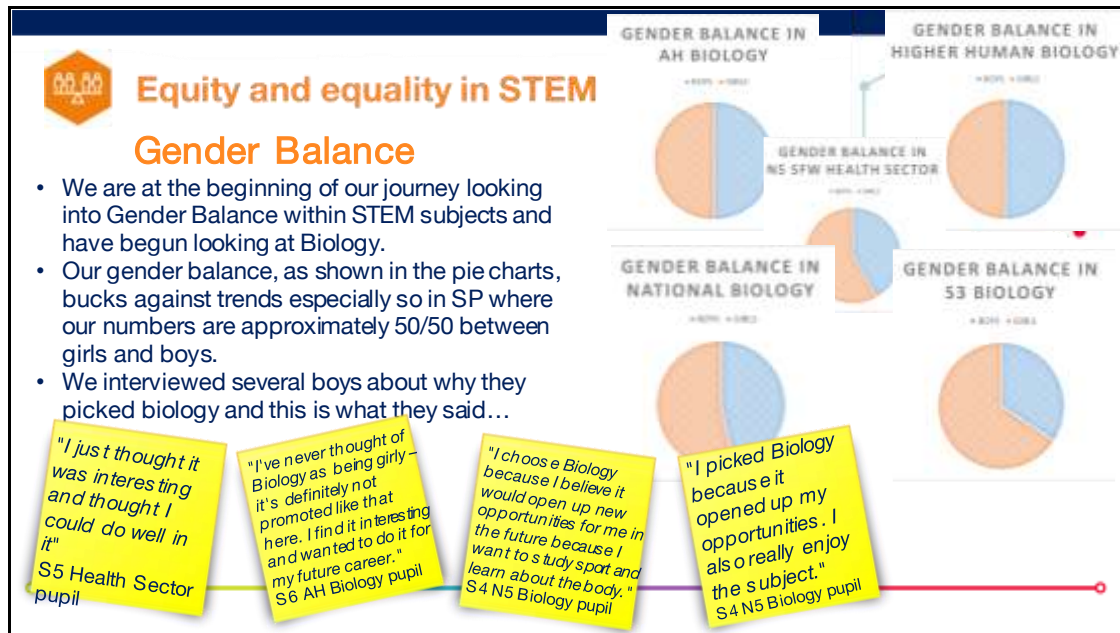
**Targeting pupils for STEM experiences** - For STEM events such as 'STEP into STEM' we promote the event to all pupils but will then filter the pupils based on their SIMD status and also to ensure a good gender balance in the group. Pupils are unaware of this selection but this targeted intervention has proven successful with pupils reporting that they are more likely to think about careers featured at these events, e.g. dentistry.

**Work Experience** - Numerous pupils have completed virtual work experience through programmes promoted in school, e.g. the Speakers for Schools and Girls into Engineering programme. We also have pupils applying for the Science Insights programme this year. Often work experience opportunities are created using family networks and this programme alleviates that barrier for our young people many of whom do not have family contacts to secure this sort of opportunity. We support all pupils to apply for work experience and make sure to challenge gender/LGBT+ stereotypes when promoting work experiences and careers. Additional Pupil Statement after completing NHS NextGen Nursing:

*On Monday the 20th of February I completed the online virtual nursing work experience hosted by speakers for schools. I felt as a young person with not much knowledge about how to actually plan my career in nursing that this was very helpful and I would not have got this valuable into nursing elsewhere."*

Molly S5 Higher Human Biology pupil





When we spoke to boys taking biology based subjects (we spoke to male pupils taking S3 and S4 Biology, Higher Human Biology, N5 SfW Health Sector and AH Biology), a lot of them related Biology to their future careers. Career aspirations varied from paramedic, nursing, medicine, sports science and zoology. They also talked about events in the department such as Biology week and our Christmas treasure hunts or Easter escape rooms as reasons why they choose to study biology.

Looking forwards we are going to delving into gender balance in other science subjects and using the Education Scotland materials on Improving Gender Balance.

Numbers for the pie charts – 2022/23 cohort:

- AH Biology – 3 girls, 3 boys
- Higher Human Biology – 9 girls, 9 boys
- N5 SfW Health Sector – 7 girls, 5 boys
- National Biology – 23 girls, 20 boys
- S3 Biology – 48 girls, 25 boys

