

# Unlocking

Science  
Technology  
Engineering and  
Mathematics

in CLD Practice

Case Studies  
2019-2020



# Foreword

Unlocking STEM in CLD is a programme and set of resources which came about as a result of collaborative working between Aberdeenshire and Aberdeen City CLD staff and Aberdeen Science Centre. Gaps in learning and development opportunities for CLD staff and volunteers were identified and the creation of learning programmes and materials were seen to be important in strengthening understanding and engagement around this topic. Funding and support from Education Scotland made the initiative possible. Our title of Unlocking STEM in CLD captures our core purpose.

What is STEM? Science, Technology, Engineering and Maths (STEM) are directly relevant to every aspect of modern life. STEM encourages curiosity, exploration, reasoning and the critical understanding of the world around us. More importantly, skills gained through STEM training enhance confidence, communication and collaborative working. The STEM agenda is completely compatible with CLD. Our delivery of professional learning introduced the principles of Science Capital and enabled CLD practitioners to develop and facilitate fun, interactive STEM learning engagements in their operational context.

We are pleased with the developing culture of collaboration through this work so far – very productive working and professional learning relationships have been formed and we can already see the impact of learning on practical delivery. Working across boundaries has been easy due to our organised approach and emergent results. The theme of collaboration sits well with the Aberdeenshire Community Learning Partnership and the Northern Alliance Regional Improvement Collaborative who endorse this approach.



The case studies captured here demonstrate a wide variety of contexts of CLD delivery, including youth work, family learning, intergenerational work, adult learning and staff professional development. They will be distributed across the Northern Alliance area and nationally.

**Sue Briggs**  
**Strategic Development Officer**  
**Aberdeenshire Council Education and Children's Services**

This collaborative project has helped myself and my team vastly improve our practice. Working closely with the CLD teams in Aberdeen City and Aberdeenshire really helped us understand the wide variety of learning that is possible through Community Learning and Development. More importantly, it helped us see the positive change CLD brings to people and communities.

This learning is now forming the basis of all our STEM engagements and this project enabled our team to reach more communities than ever before. We see this as the first step in helping improve peoples' lives, by helping them engage with STEM in a way that is meaningful to their personal circumstances, their interests and aspirations.

**Kostas Minas**  
**Community Engagement Manager**  
**Aberdeen Science Centre**



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# What do we mean by Community Learning and Development (CLD)?

Community learning and development (CLD) has a powerful impact on the lives of learners and communities, supporting them to identify and work towards change. Whether that change takes place in an individual's life, helps to create a resilient and enterprising community or contributes to better public services in a changing landscape, Scotland has a need for successful learners, confident individuals, responsible citizens and effective contributors working together to build a shared future.

## National priorities for CLD

- Improving life chances for people of all ages through learning, personal development and active citizenship
- Building stronger, more resilient, supportive, influential and inclusive communities

### Further Information

[The Requirement for Community Learning and Development \(Scotland\) Scottish Government Regulations \(2013\) Guidance for Local Authorities.](#)

[CLD Standards Council Scotland](#)

[Education Scotland, Community Learning Development](#)

[The Northern Alliance – A regional improvement collaborative](#)

[Aberdeenshire CLD Service – CLD in Aberdeenshire Blog](#)

## What has the Unlocking STEM in CLD Partnership achieved?

The case studies in this publication illustrate the breadth of STEM activities that are being delivered by CLD practitioners across the North East of Scotland. We hope they will encourage you to incorporate STEM into your own practice.

As a result of this collaboration we have developed an online continuing professional development course “Science for Community Learning and Development Workers”. This course aligns with the CLD Standard’s Council’s Competency Framework and has been designed to support Community Workers to deliver practical science demonstrations in their own community.

### Unlocking STEM in CLD Practice



Online Continuing  
Professional Development  
Course for CLD Workers

[Science for Community  
Learning and Development  
Workers](#)

### Unlocking STEM in CLD Practice Partners

[Education Scotland](#)

[Aberdeen Science Centre](#)

[Aberdeenshire Council – Community Learning and Development](#)

[Aberdeen City – Adult Learning and eLearning](#)

[Aberdeenshire Learning Communities Partnership \(ALCP\)](#)



## Case Study 1

# Unlocking STEM in CLD Aberdeen Science Centre's perspective

**“I thought that STEM was not for me. I now feel more confident doing STEM activities with my learners.”**

## Background

This case study discusses the cross-disciplinary collaboration formed in the North East of Scotland with the aim of “enhancing professional learning in STEM” for CLD practitioners. The collaboration was formed between Aberdeen Science Centre and the CLD teams of Aberdeen City Council and Aberdeenshire Council. This project has been funded by Education Scotland and our main objective was increasing CLD practitioner confidence to engage with STEM in their daily practice.

## What happened?

Aberdeen Science Centre’s contribution to this project was the development and delivery of an interactive engagement that aimed to enhance CLD practitioners’ confidence, when engaging with STEM. Following discussions with our CLD partners, this engagement included a PowerPoint presentation, an associated booklet with links to additional resources and 5 hands-on STEM activities that practitioners could try with their learners. Initially, we offered this session in two Aberdeen City locations (the Curl and Aberdeen Science Centre), as well as one session in Aberdeenshire (the Fly Cuppa, Inverurie). Through these sessions, we engaged with 90 practitioners, including middle and top-level managers.

Due to the positive feedback we got from these sessions, we also offered an additional session that took place in Ellon Academy Community Campus, as well as helping create a digital resource that we can share with our colleagues within the Northern Alliance.

## What did people say?

Our team provided some questionnaires that interrogate our participants' Science Capital. These questionnaires are focused on three dimensions: relevance of Science, Science skills and Knowledge of Science. These questionnaires were shared with participants at Aberdeen Science Centre and the Flying Cuppa sessions. Participants were asked to fill in these questionnaires at the beginning and end of each session.

Although there were not any changes in the Science Skills sections, there were considerable improvements in the relevance of Science (e.g. "I use Science in everyday life") and Science Knowing (e.g. "I feel like I know quite a bit about Science") sections.

These sections indicate that there was an improved confidence of CLD practitioners to engage with STEM in their daily practice. Furthermore, discussions with participants at the end of all workshops enabled us to understand that they enjoyed taking part in the session. More importantly, the vast majority of people asked said that they viewed this resource as informative and that they would use at least some of the proposed activities with their learners.

## Findings

This partnership has been created as part of a bigger project that enhances professional training in STEM and it aims to boost STEM teaching in Scotland. Aberdeen Science Centre's participation was aiming to provide CLD volunteers and practitioners with the opportunity to be trained in creating meaningful engagements with STEM, in their daily practice. Looking retrospectively to this project, Aberdeen Science Centre's team has greatly benefitted by our participation to this project.



Our collaboration with the CLD teams in Aberdeen City and Aberdeenshire Council have helped us understand the diversity and variety of informal learning settings in our area. This has greatly improved our Science Communication skills, as well as connecting us with more local communities. We have now implemented our learning to all our engagements and we are looking forward to inspire more people to engage with STEM.

## Case Study created by:

Kostas Minas, Community Engagement Manager at Aberdeen Science Centre



## Case Study 2

# STEM Numeracy Why does washing your hands kill germs?

**“I would recommend it to anyone thinking about it. It's a great way to learn without going to a bigger setting like a college”**

Core Skills Numeracy Learner Level 2 and Level 4

## Background

Learners frequently approach the CLD service to enquire about ICT classes, people are not afraid to admit they struggle with technology, however far fewer people approach the service because they find everyday numeracy challenging. When talking to our learners about their educational background it became apparent that many learners who access CLD provision left school at 16 years old and few had engaged in formal learning since. Very often learners reported that “I hated maths” or “I failed maths at school.”

Many of our learners work in areas where hand hygiene is a high priority (e.g. food processing, care work or early years childcare settings). This project was designed to arouse our learner's curiosity about why handwashing is effective.



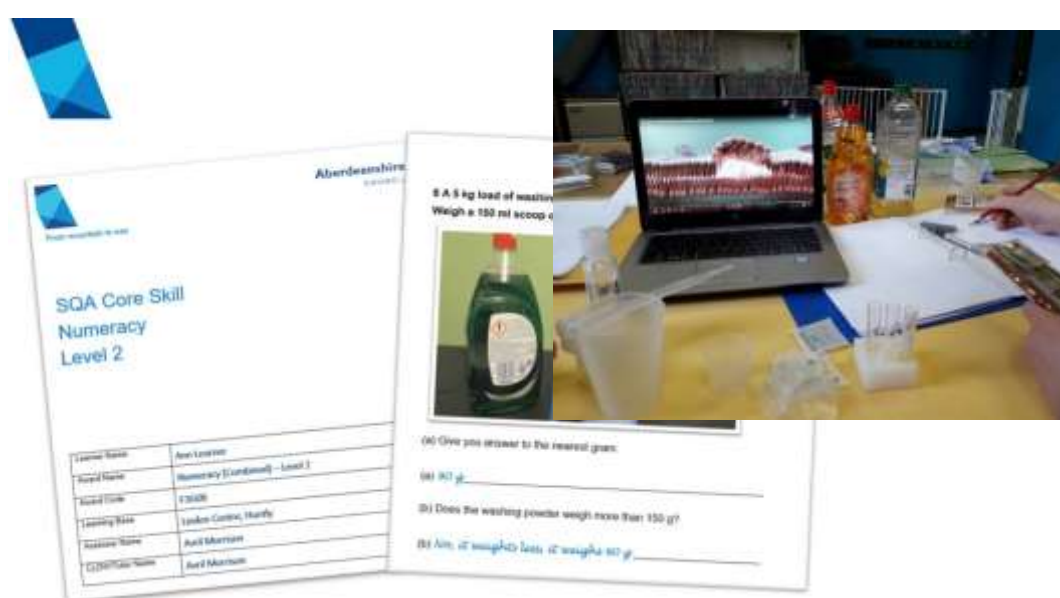


## What happened?



Learners carried out a short experiment showing the effect of hand gel and washing up liquid on a mixture of oil and water. To carry out this experiment learners were asked to engage in some simple maths tasks to calculate the cost of carrying out the experiment and the volumes of liquids required.

The aim of this project was to use everyday number concepts like prices, times and volumes to demonstrate to learners that they can and do “do maths” every day and that they can work on and improve these skills to benefit themselves and their families. A pilot project run from March to June 2019 saw seven learners successfully complete the SQA Numeracy award at Level 2. Two learners have since gone on to complete a Numeracy award at Level 4 and five learners are waiting to start the Numeracy 2 award in the new academic year



## What did our learners think?

## Learner 1

Did you study maths or science at school?  
Did you like it?

**“Yes I did, and absolutely hated it.”**

What classes have you taken with Community Learning?

**“Numeracy Core Skills”**

How does Core Skills/ Community Learning compare with other experiences of education?

**“I found it very easy and laid back. No pressure.”**

Thinking about the Numeracy / Science of Hand washing work, what did you think of it? Did you learn anything new?

**“I refreshed knowledge I didn’t realise I already possessed, and it gave me more confidence in my own abilities.”**

What would you say to others thinking about getting involved with our Adult Learning?

**“I think it is a good course to get a scope of what you know and what you need to learn, and to boost confidence.”**

## Learner 2

Did you study maths or science at school? Did you like it?

**“Yes, I studied Maths and Science at school. I enjoyed Science more than Maths, especially the experiments we did.”**

What classes have you taken with Community Learning?

**“I am currently doing my SCQF level 4 Numeracy at the Linden Centre.”**

How does Core Skills/ Community Learning compare with other experiences of education?

**“I think it's a more relaxing atmosphere, being able to go at your own pace and no pressure.”**

Thinking about the Numeracy / Science of Hand washing work, what did you think of it? Did you learn anything new?

“I thought the Numeracy/Science of hand washing work was good, I enjoyed the experiments with mixing hand wash, hand sanitizer and washing up liquid with water to see how they mixed together. I learnt that hand sanitizer must contain at least 70% alcohol to be effective in killing germs and washing hands with water alone will not kill any germs.”

What would you say to others thinking about getting involved with our Adult Learning?

“I would recommend it to anyone thinking about it. It's a great way to learn without going to a bigger setting like a college and my assessor is very helpful and patient with me.”



## Findings

The pilot project was a great success, it was trialled with a range of learners who had experience of other Community Learning provision, including ESOL learners and ICT learners. All learners who started the qualification completed it and two learners went on to complete more advanced level qualifications.

Learners valued the local provision, the chance to engage with topics they hadn't thought about since school and the hands-on practical experiments.

As a community worker I enjoyed seeing learner's confidence grow as they realised they *could* do maths. It was especially satisfying to hear how learners were using their new found knowledge in their everyday lives, by being able to calculate a percentage discount when shopping or helping their children with their maths homework.

**“I would recommend it to anyone thinking about it. It's a great way to learn without going to a bigger setting like a college”**

Core Skills Numeracy Learner Level 2 and Level

### Case Study created by:

Avril Morrison, CLDW, Aberdeenshire Council



Case Study 3

## CLD do STEM

**“I’m confident that I can now do some of these activities at home with my kids”**

**Parent**

### Background

#### Family Learning in STEM.

CLD in Aberdeenshire took an opportunity to join a partnership from our Leisure and Culture partners. They held an open weekend to present and promote their services and new strategies. As a partner, CLD took into consideration what other services would be presenting during the event and agreed that we could provide some family learning using STEM as the engagement. Aberdeen Science Centre were invited to attend and provide more sophisticated tools while CLD worked science magic from household ingredients. Coding building a robot, Knex and other tools were provided by Aberdeen Science Centre.

Working in the field of CLD, STEM is an area where parents may not have the knowledge, confidence or experience to transfer everyday items into a STEM agenda.

The sessions hoped to alert parents to easy, manageable objects which they would have at home and turn them into fun STEM activities at home.

Anecdotal evidence was gathered during the event to support the evidence in this case study.

Sessions were carried out in Ellon & Turriff localities.

### What happened?

Areas were provided with instructions and the necessary objects/ingredients to complete the tasks. Where possible, a member of the CLD team would guide and suggest how to tackle if they saw that parents were struggling. The aim was for any adult to work it out as a team with their child.

Take home cards (A6 size) were provided for all activities giving full step by step instructions with pictures and requirements.

Parents did say that they would try many of the examples at home.



**“I never thought to make paper aeroplanes with my kids...Grandad used to do that with me when I was younger.” Parent.**

**“Building a tower from food was a great idea” Parent.**

Aberdeen Science Centre worked with children on a 1:1 basis and supported them to achieve their goals e.g. planning a path for a robot, joining and completing an electrical circuit.

### **What did people say?**

Learners:

Enjoyed the session and thought that the take away cards were a great idea.

Participants:

Left with a positive message that they can do STEM in their own home.

Communities

Agreed that it was a quality and suitably targeted.

### Practitioners

The take home cards were shared with other practitioners CLD after the event.

### Partners

Other partners did have feedback comments that they had enjoyed the science sessions as they were well constructed and understandable.

## Findings

Participants were engaged with what was happening. They found that they were able to understand the scientific method that was happening, even if they couldn't describe in scientific terms. E.g marshmallow and spaghetti tower.....it was top heavy so it would fall over. Paper aeroplanes flew further due to the folds of the paper.

Most parents said that they would try some of the activities at home. They were confident that they could carry them out without too much preparation and effort.

CLD provided a wide range of activities and shared take homes cards which gat clear instructions with picture steps. The pitch of required pre-knowledge was as the right level for families to engage with the activities. Not too high brow. Aberdeen Science Centre activities were clearly aimed at the children and most parents stood back and watched rather than participated.



**Parents are now equipped to do STEM activities at home with their families.**

**Case Study created by:**

Annette Holland SCLDW, Aberdeenshire Council



## Case Study 4

# Playing with Colour

## Art and science:

### Using natural dying as a creative and expressive tool

#### Background

This initiative was part of the Branching Out project, a 12 week programme of environmental activities for adults in recovery from mental health issues, which is delivered by Healthy Minds and the ACC Ranger Service. We are constantly looking for new ideas both to engage and evaluate and an idea that covered both bases was discovered at a CLD STEM workshop event. Initially, the technique was used as an evaluation tool on top of the existing, often literacy heavy, methods that we use. However, it has since grown to become an integral part of the course and has really captured the imagination of learners

It was hoped that this could add another small piece to the toolkit but has grown to become an interesting project in its own right.

#### What happened?

After attending a CLD and STEM workshop I discovered the joys of creating using turmeric dyed fabric and pH shifters. I thought this would be an interesting tool to engage learners to think about their evaluation of the Branching Out programme in a way that did not need literacy skills or even verbal communication.

Learners were given a piece of fabric already dyed with turmeric powder, a brush (or they could make their own implement) as well as bottles of vinegar and sodium hydroxide to change to pH. They were then asked to create a 'prayer flag' summing up their experience on the course so far. This could be one word, a picture or a phrase. The magic of painting on the fabric with an alkali (and using the acid to erase mistakes) is quite entrancing and opened up a discussion around what was going on. Also having to distil thoughts into what could be conveyed on a piece of fabric freed the mind from fear around lengthy forms, expressing things verbally in front of their peers and allowed more honesty.

Learners moved on spontaneously into creating flags for their peers, expressing how much support they had received and positive qualities that they had.

Members of the group carried out some research on how to make the turmeric less fugitive and what other plant dyes could be used.

It has now proven to be so popular that each group incorporates weekly dyeing with plant material. This allows an easy in to conversations on the binomial system, sustainability of the textile industry, living off grid and a myriad of other related topics.

In the Branching Out setting it is a very simple activity to undertake, needing very few materials and able to be undertaken in an outdoor space where any attempts at written work can fall flat.

## What did people say?

Using the fabric as an evaluation tool was very popular as it was fun, non-threatening and accessible to all. Some participants were happy to stop there but the real learning started when the group wanted to keep pushing to find out more and began to ask the questions themselves – **what happens if...?** – and undertaking their own research. One participant produced a fantastic journal filled with the results of her experiments and has since gone on to carry on her learning.

## Findings

What was originally seen as a useful tool to engage people with has developed much further with plenty scope to keep pushing boundaries. It has proved to be an excellent starting point for further discussion and experimentation and can be used to demystify and explain many concepts. It needs very little in terms of resources and can really capture the imagination of learners who can then go on to explore the subject further.



### Case Study created by:

Annie McIntosh, CLDW Aberdeen City Council CLD Service





Case Study 5

## Make in Metal

# Creativity in STEM – a contradiction in terms?

## Background

The Smiddy was once a Blacksmith's Workshop and lay derelict for over 30 years until Aberdeenshire Council rebuilt the workshop as part of Banff's Regeneration Programme in 2018. The Smiddy has become the home of [Vanilla Ink The Smiddy](#) - a Social Enterprise bringing Silversmithing & Jewellery opportunities to disadvantaged Young People in Scotland with the philosophy to Educate, Inspire and Empower.

The "Make in Metal" project evolved from discussions between Vanilla Ink The Smiddy co-ordinator and Senior CLD Worker in Banff. As a social enterprise, Vanilla Ink The Smiddy were exploring creative ways of working with young people in the area who would benefit most from what they could offer. The CLD Work with Young People team were looking for ways to engage young people who were struggling with low level mental health issues and social anxiety. A pilot programme was conceived, and a small grant was received from Aberdeenshire Council's "Opportunities for Young People Fund".

Four blocks of weekly three-hour sessions were planned. For each block, three places were advertised out to young people between the age of 16 and 25 who lived in the Banff Academy network. The other 3 places were filled by young people already known to the CLD Worker in Banff Academy. The programme was restricted to 6 participants per block due to the size of the workshop.

The outcomes for the programme:

- Access to creative opportunities for young people in Banff will be increased
- Young people's horizons for future possibilities will be broadened
- The confidence and self-esteem of participants will be strengthened

After the programme, we interviewed a young person from the community, a young person from the Academy, Megan Falconer (Silversmith) and CLD Staff.

## What happened?

### Block One: **Silversmithing**

Four weeks x 3 hours a week

3 young people from the community and 3 referred by the CLD Service

This was an introduction to the Silversmithing industry looking at how things can be constructed and formed. Participants each made a spoon using different techniques such as designing and soldering and they each raised a silver bowl from a sheet of metal.



### Block Two: **Jewellery Making**

Four weeks x 3 hours a week

3 young people from the community and 3 referred by the CLD Service

An introductory course to the basic hand tools in the workshop. Participants learned to use files, saws, pliers and blow-torch soldering. They made rings, learned how to set stones, experimented with etching techniques and polished & finished their items.

### Block Three: **Wax Carving**

Four weeks x 3 hours a week

4 young people from the community and 4 referred by the CLD Service

Carving jewellery using jewellers wax used in the industry. This was sent away to be cast in silver and brought back in the last two weeks for participants to clean and finish their work.

### Block Four: **Casting**

Four weeks x 3 hours a week

3 young people from the community and 3 referred by the CLD Service

An introduction to different jewellery casting techniques including cuttlefish, sand and water. They explored different techniques to create different outcomes and decided which would work best for different situations depending on what they wished to make.

As well as creating their pieces in silver, the young people referred by CLD also completed a Hi-5 Award.



## What did people say?

Generally, how did you feel about the programme?

“I loved it. I think the best bits were meeting the Young People and seeing them develop their skills over a certain amount of time. A few didn't just do one block; they came back to do 2 or 3 blocks. I really saw them grow in confidence, not just in themselves but in their making skills and how they used the workshops”

**Megan, Silversmith**

What did you enjoy the most?

“Everything! But I enjoyed using the tools. When we did the soldering, we used blow torches. It was fun. I do ‘Energy for Girls’ at school and we just use soldering irons.” **CLD Participant**

Why did you decide to sign up for Make in Metal?

“I'm off work at the moment. I suffer with my mental health. I saw this advertised on Facebook and I showed my GP and asked him if I should go. He thought it would be a really good thing for me to do and I'm really enjoying it. Are there going to be more courses because I'd like to sign up.” **Community Participant**

Is there anything else you'd like to tell me?

“Yes, it can really help with mental health. It helped me because one week my dad was quite ill. Being in the workshop for 3 hours I didn't think about any of that stuff. It relaxes you and it's very therapeutic” **CLD Participant**

It was all amazing – the highlight of my week. I used to get up on Wednesday morning and say to my mum ‘only 6 more days till The Smiddy’

**CLD Participant**

Has it made you think differently about your future?

“Yes, it has changed my mind about careers. Using the different skills and tools, it has made me think. I didn’t realise you could make Silversmithing a career, I thought it was just a hobby. Megan has said that I could do my work experience here, so I’d really like to follow that up” **CLD Participant**

What do you think the young people have achieved through this?

“I’ve seen their confidence grow. When they are in the workshop they are smiling and chatting with each other in a way I’ve not seen them behave in school. I could work with them for a year and still not see that kind of change in them.” **CLD worker**

Would you do anything differently next time?

“Yes, A lot of the young people were interested in quite technical things, such as the temperature for soldering etc. I would probably incorporate that into courses in the future.” **Megan, Silversmith**

In the first block there were 3 young people who were very quiet. By the end they were best friends, excited to be there and see their pals and were exchanging phone numbers. Seeing those relationships build was definitely one of the highlights.

**Megan - Silversmith**

## Findings

Speaking to the young participants, Megan the Silversmith and CLD Staff, it was very clear that we have met and exceeded the outcomes we set. Everyone was amazed at how effective the space and the activity was for building confidence and self-esteem amongst the young people, as well as building their technical and creative skills.

Also, they had access to an engaging activity they wouldn't normally have had, absolutely crammed full of STEM activity. None of the participants reported feeling under stress at performing those tasks as they weren't presented as STEM Learning

Activities but done in an informal setting, in an informal way and applied to a process they were fully engaged with.

It would take me too long to name all of the STEM activities involved in this project, but I will list a few of them.

Designing, testing, measuring, experimenting, cutting, soldering, hammering, sawing, filing, decision making, stamping, finishing, questioning, communicating, interacting and making tea.



**“Creative learning and teaching is the most fulfilling route to both deep learning and a rounded adulthood.”**

**Case Study created by:**

Kate James, Senior CLDW Aberdeenshire Council



## Case Study 6

# Intergenerational ICT Learning

**“It has opened up a whole new world of technology for me. I can facetime my grandchildren and keep in touch with family and friends around the world”**

## Background

Community Learning and Development run a weekly Information and Communication Technology (ICT) Class for older adults. Our ICT learners are supported by adult volunteer tutors and young people from the local secondary school. Learners choose what they want to learn and can work towards an SQA accreditation, if they wish.

### **Why run an ICT class for older adults?**

Because the local people in our community wanted to gain confidence using technology.

### **How do we know what local people wanted an ICT class?**

Because a member of the public asked if there were any computing classes on at the local community centre.

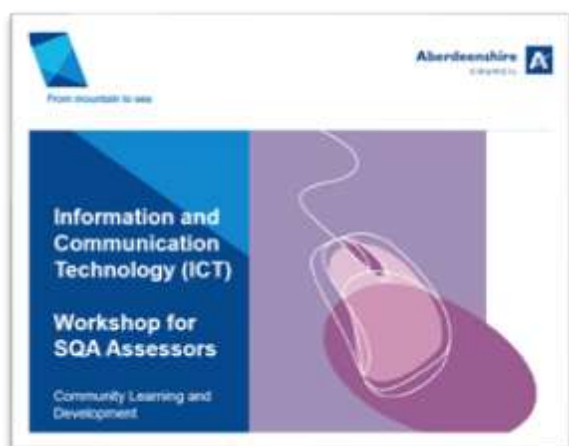
**“I am a member of the local OAP social club and at one of our meetings someone suggested a lesson on how to use a computer. Where do we start? The local Community Centre. After enquiring there, the senior community worker came along to our next meeting to find out how much interest there would be and how much ICT knowledge the group had. This varied from a little bit of knowledge to being completely computer illiterate!”**

## What did Community Learning staff do to support local volunteers and learners?

The CLD service worked in partnership with the local secondary school to establish a weekly ICT class, the school provided the ICT facilities and senior pupils were given the opportunity to work as volunteer tutors. The class runs in 10-week blocks, during the school term.

### Community Learning and Development staff:

- promoted the class locally, via traditional adverts, the local press and a Facebook page.
- developed a dynamic curriculum with a strong emphasis on local information
- managed room bookings and arranged access to public access laptops and a public access printer
- Supported volunteer ICT tutors, both adults and young people.
- Provided assessment and accreditation opportunities to learners and volunteer tutors (SQA Core Skills in ICT, Working with Others or Problem Solving at Levels 3 and 4 or the Saltire Award for Volunteering)
- Managed outreach activities to the local ESOL (English for Speakers of Other Languages) class and a residential care home for adults.
- Developed and shared resources for delivering ICT with other Community Workers
- Provided training to other Community workers to enable them to accredit ICT work in their local area.



## What happened next?

**A weekly class ICT class was established and advertised locally.**

“I saw an advert in the local paper I thought I would give it a go. I didn’t have a clue about internet, wi-fi or computing applications, that was the main reason I came. The other reason was to be in an environment to meet new people, to make friendships.”

“I saw the class advertised in the local paper. I was reluctant [to go to a class] but made an effort and now come regularly. My wife was fed up with me, as I relied on her to send and receive emails on my behalf.”

“Having never purchased anything online I am very hesitant to explore the options and would like to have the reassurance from a class”

“[I started] volunteering 3 years ago, I saw an advert in the paper. I came in to see a member of staff [and have volunteered at] a local mental health charity, the secondary school and the community centre.”

### What did people say?

#### What were the volunteer’s motivations for tutoring in the ICT class?

“Volunteering gave me a reason to smile because at the time I was having difficulties, this year I have something to do, last year I was alone and miserable. It’s not only helping others but learning also. My main subject at University was IT but this has helped me refresh my memory. I also [use my IT skills] to design worksheets for other adult literacy classes.”

“I volunteer for something to do, I enjoy the social interaction, you talk to people you make the learners feel at ease and everyone needs a different style [of tutoring] to help them learn. Often one to one help is needed to help people gain confidence.”

#### What did the learners hope to achieve in the ICT class?

“My aim is to have confidence to use a laptop or my phone for information.”

“I still have an awful lot to learn but I find it invaluable when dealing with the administrative work on the farm, such as getting on line to register animal births, reporting animal movements and taxing farm vehicles.”





“I want to renew my TV licence online.”

“I’m treasurer of my local church and secretary of Macmillan Cancer Support. I want to be able to send and receive emails so I can continue my voluntary work for these organisations.”

“I find it very useful for my work with the OAP group, I have to keep a register of members and make posters and print tickets for various events. I also use Excel to keep a record of the accounts.”

“I’ve met more friends here, it’s good, I like it!”

#### What do the learners feel they have achieved by taking part in the ICT class?

“I do my homework on my phone as I don’t have a computer at home. I have more confidence to borrow a laptop to use in class.”

“I have learned skills such as using different programmes like Word, Excel and PowerPoint, how to use email, how to transfer photographs from my camera to computer and I know how to get on Facebook”

“I know how to avoid bad stuff, scams and stuff and I’ve got a Core skill, I’m proud of that.”

“I am still a member of the class and since then I have completed SQA Core Skills in ICT at levels 3 and 4. This has only been possible because of the patience, perseverance and dedication of the tutors who are very approachable and extremely helpful.”

“I’ve already completed my first unit, Level 2 ICT and I’m working on level 3 ICT.”



### What changes have the volunteers witnessed in the ICT learners?

“[The learners] are a lot more confident with their laptops, putting passwords in, knowing what a secure website looks like. Some like working towards a certificate, which makes them feel good.”

“I remember one learner who was scared of her phone last year, scared to press a button, this year she is confident using her phone and is now using a laptop.”

### What has the CLD service learnt from the project and what will we do next?

There continues to be a demand for ICT in the local area and we continue to run our classes in 10-week blocks, offering accreditation to those who want it.

- Don't assume that everyone has access to the internet at home.
- Don't assume everyone has a reliable broadband connection
- Don't assume people have the confidence to use public access computers in the library.
- Just because someone can access their emails on a phone does not mean they can send and receive emails on a laptop.
- People who access the internet on their phone may struggle to download and print pdfs.
- Learners can be internet savvy and confident using social media but find it challenging to use office software.
- Many people choose not to use social media so find it hard to respond to local consultations or find out about local events.
- Many learners rely on others to find information for them online, send and receive emails or shop online.

The ICT class has developed into a friendly and supportive place where learners and volunteer tutors work together to develop their skills and share knowledge and information with each other. The class has made a positive difference in our community, it is strengthening community ties and allowing new friendships to develop. I would love to see similar groups develop in other areas having seen the benefits in my own community.

**Community Learning and Development Worker**

## Findings

Several themes became apparent in the narratives given in this case study

- Learners valued the opportunity to learn at their own pace
- Learners and volunteers placed great value on the social aspect of attending the classes
- Learners were proud of their achievements and keen to continue to develop their skills
- Integrating local topics and tailoring classes to suit learners' needs ensured learners remained engaged even if they found the technology challenging.

**“It has opened up a whole new world of technology for me.**

**Learning is a lifelong process and you are never too old to learn something new. It is tremendous fun and very worthwhile and keeps your mind active.**

**It makes you feel good when you learn a new skill and you get a sense of achievement.”**

**Case Study compiled by:**

Avril Morrison, CLDW, Aberdeenshire Council



## Case Study 7

# Turriff Learning Pathways

**“Life is like riding a bicycle. In order to keep your balance, you must keep moving.” — Albert Einstein**

## Background

Community Learning and Development in partnership with Turriff Academy senior management team recognised a small number of S3 pupils in 2017/2018 were at risk of leaving school at the end of S4 and falling towards a negative destination. Many of these young people for a whole host of reasons struggled with the broad general education programme that had been provided from S1 – S3. However, there was recognition that many of these young people enjoyed participating in more practical methods of learning. During the 17/18 academic year a few of the young people had positively engaged with CLD and it was felt as a follow on that this would be a good progression route for the young people to undertake an experiential learning programme whilst obtaining accreditation along the way.

It was hoped through successful participation that the young people would complete the programme with a lessened chance of falling towards a negative destination and increased skills to carry on within senior phase education, head towards further education or employment.

## What happened?

The programmes most experiential aspect relied on the sport of Mountain Biking and Cycle Maintenance. In terms 1 and 2 of the academic year young people participated in these activities. The mountain biking programme followed the Go-Mountain Bike Accreditation syllabus. The young people participated in a trail environment in nearby Delgaty Woods.

The cycle maintenance programme commenced after the October holidays in which the young people worked through a syllabus of participating in routine tasks of maintaining a bike such as cleaning and oiling a chain, inflating and changing tyres, completing puncture repairs and a full bike health check. The other aspect of the course was to follow non-routine tasks which involved changing parts on a bike such as; changing brake pads, changing a drive train and lubricating and greasing parts of the bike such as the headset and bearings.

Both areas of the course placed a heavy emphasis on the use of video technology to provide as a resource for demonstrations for both cycling technique and cycle maintenance. The YouTube

channel of Mountain Bike company GMBN (Global Mountain Bike Network) was pivotal in this part of the delivery. In addition, young people used video cameras whilst cycling to collect evidence of their cycling performance.

### What did people say?

“I thoroughly enjoyed participating in the Learning Pathways course, I learned so much about bikes and improved my skills at the same time.”  
Learner

“I enjoyed the Learning Pathways course so much I would do it again in S5 if I could.” Learner

“The delivery of the learning pathways course has had a transformational impact on the young people involved. Through speaking to partners, there has been a recognised change in the young people’s whole school academic performance.” Colin McRae (CLD Worker)

### Findings

The delivery of this project has been hugely valued by Turriff Academy Senior Leadership Team and their respective Guidance Team. The projects initial success has resulted in another cohort undertaking the programme in 2019/20.

Experiential learning opportunities at the forefront of engagement is pivotal to engaging hard to reach young people within school provision. A wide evidence base in Aberdeenshire has developed from other opportunities provided in other learning communities with identified significant need are finding similar results.

The use of creative learning opportunities such as this can have transformational effects on the young people involved. In addition, in terms of a Working with Young People Offer across

Aberdeenshire, dynamic learning opportunities like this are evidently having proven impact with young people who are engaging in these alternative curricula within education time.

## Creative learning opportunities can have transformational effects on young people.

### Case Study created by:

Annette Holland, Senior CLDW, Aberdeenshire Council



## Case Study 8

# Turriff DJ Project

**“I didn’t know anything about mixing music before I came here”**  
 young person from the DJ group

## Background

CLD Aberdeenshire staff worked with targeted young people in the Turriff area. Music was their common denominator; therefore, a DJ group was born. Throughout the months they learnt how to use the equipment, mainly through peer support or YouTube. They have built confidence and a greater understanding of the technology behind the scene of mixing decks. As the group progressed, they were being asked to provide discos for local primary schools in the cluster area. From the money raised from the discos they researched and purchased additional lights and mixing boards.

Our Education partners have expressed that they recognised the difference in the young people who attended the group. They are more confident, and their concentration has increased.

This case study was written in conjunction with the young people attending the Turriff DJ Project

## What happened

Young people of all ages got together on a weekly basis to develop their skills on the music decks. The group are set up as a rolling peer support initiative and train each other in using the equipment. Staff and volunteers are on hand to oversee the health & safety elements of the equipment and participants. Over the years they have updated their equipment and increased their knowledge of using apps and vinyl.

As the group developed, they were asked to perform a disco set at a local primary school. From the success of this, the requests grew and so did their reputation of providing a good service. By doing these gigs they were able to purchase more sophisticated equipment which they had to research and learn how to use and make it work for the group. After the equipment came the lighting rigs. Their knowledge grew through experience of using the lights and syncing them to the decks. Setting play lists for the discos incorporated maths as they were required to calculate the length of the record and add them up to complete the time allocation

All these new experiences linked in real terms to technology and maths.

## What did people say?

“I didn’t’ know anything about how to mix music before I came here.”  
Learners

“This group are very inspirational to the younger children. They are thinking that when they go to the secondary school, they could be part of this group.” Teacher

“It’s great to see the individuals grow in confidence in learning how to use equipment to perform in front of peers and younger children.” Practitioner



“I now see where maths fits into music. Without adding up the lengths of the records we could over run our set.”  
young member of the DJ Project

### Case Study created by:

Annette Holland SCLDW and members of the Turriff DJ Project

Aberdeenshire Council

## Case Study 9



# CLD STEM activity in Edenholme Care Home

**STEM activities can be used as an important part of engaging with and building relationships with residents of all ages and abilities and can lead to other groups and opportunities being created.**

## Background

This brief case study describes an activity undertaken by Community Learning and Development workers during the covid-19 pandemic where staff were re-deployed through an emergency planning programme to a variety of roles.

Edenholme is a care home in Stonehaven. With staff from the CLD Service and Live Life Aberdeenshire <https://livelifeaberdeenshire.org.uk/> deployed to work in the home we organised together a morning of STEM activities for residents as part of Aberdeenshire Wellbeing Festival in May. With lockdown restrictions meaning residents couldn't leave the home and with no visitors allowed in there was a real need for engaging and inclusive activities for the residents.

The CLD staff had all taken part in the **Unlocking STEM in CLD** professional learning programme run through the collaborative project involving Aberdeenshire council, Aberdeen City council and Aberdeen Science Centre.



## What happened?

Using a serving trolley as a portable worktop staff took a number of activities round the 5 households in the home. The activities were interactive such as dipping your finger in a saucer of water with pepper sprinkled on top - adding a bit of detergent then showed the importance of handwashing. The activities were also visual and fun such as mixing vinegar and baking soda producing gas to blow up a disposable glove.

Lots of residents were able to take part in and watch the activities, as well as laugh at some of the light-hearted conversation and antics! There was also plenty of discussion about the science behind the experiments.

## What did people say?

This activity was delivered in very unusual circumstances at the height of the pandemic and evaluation and participant feedback was not gathered in our usual way. Staff involved were very clear however that the delivery model made an impact in terms of health and wellbeing and that the engagement was a positive and productive one.

## Findings

The activities were a really good way to involve people with a range of abilities.

They were also an important part of engaging with and building relationships with residents which have resulted in other groups and learning opportunities being created.

The learning which staff have gained through the overall deployment activities during covid-19 is informing our planning going forward. This is an important aspect of the impact of the work on development planning.



## Case Study created by:

Ed Garrett, CLDW Aberdeenshire CLD Service

## Partner Insights

### Why did you get involved in the “Unlocking STEM in CLD Practice” project?

I work in the adult learning team at Aberdeenshire Council, I deliver ESOL (English for Speakers of Other Languages), Numeracy, Literacy and ICT Classes.

I wasn't sure if the learners in my local community would be interested in science, taking part in this project allowed me to work with my learners and find out more about their opinions on science. Fortunately, the STEM work was very well received and I have gone on to develop more resources to incorporate STEM into my work.

### Do you have a background in Science Technology, Engineering or Mathematics?

I do yes, I trained as a Biochemist at the University of Dundee and the University of Aberdeen. I've also delivered STEM education online as an Associate Lecturer for the Open University.

### What were you hoping to gain by participating in the project?

I had previously delivered science communication schemes including the Pupil Researcher Initiative and the Royal Society's Partnership Grant Scheme in Aberdeenshire. These schemes rely on a partnership between a scientist and a host organisation (often a school). I was interested to see if I could develop resources that could be used by Community Workers who had not trained as scientists but who were already highly skilled at facilitating, practical group work with adult learners to discuss STEM topics in their own communities.

### What did you learn by taking part in the project?

Lots! I'm a lot better at editing videos! Working as a partnership with 4 different organisations, (remotely due to Covid-19 restrictions) has been challenging, however it has allowed us to develop an accessible online resources that can be used by Community Workers across Scotland (and beyond!) to incorporate STEM into their own practice. Overall, I feel it has been a very positive and productive partnership.



AVRIL MORRISON



#### Job Title:

Community Learning and Development Worker

#### Organisation:

Aberdeenshire Council



## Why did you get involved in the “Unlocking STEM in CLD Practice” project?

I am always have been very passionate about Science, Technology, Engineering and Maths (STEM). This project was a fantastic opportunity for me to closely collaborate with Education Scotland and the Community Learning and Development teams in Aberdeen City and Aberdeenshire. Looking back, I am very excited with the meaningful professional connections that were created.

## Do you have a background in Science Technology, Engineering or Mathematics?

Science was my hobby since I was quite young. I was very lucky to be trained as a Biochemist and Immunologist in the University of Aberdeen, as well as getting a postgraduate degree in Medicine (Ophthalmology). I also have considerable experience as a researcher and lecturer in various Universities in the UK. Given my training and experience, I always surprise myself when I still sometimes catch myself thinking: “Maths is scary” I really enjoy challenging myself to learn more on the topic, and that the reward of knowledge is always stronger than the initial fear.

## What were you hoping to gain by participating in the project?

My main priority as a Community Engagement Manager is to inspire an interest in STEM. I am always looking for different opportunities to spark peoples’ curiosity and a sense of exploration. My previous knowledge in Science Communication, lead me to understand that there are some unconscious biases that hinder STEM engagement.

As such, our main priority was to increase the confidence of participants to our workshops, by helping them understand that STEM is all around us and we engage with it constantly. In this respect, a handful of easy-to-do, fun, interactive STEM activities were instrumental to our goal. Furthermore, using the Science Capital in practice approach, really helped us clarify our message and get more people “on board”.

## What did you learn by taking part in the project?

This project also gave me the opportunity to understand the many different ways CLD practitioners engage with their learners and the various resources they give to their communities. Later in the project, I was thoroughly amazed with the camaraderie my CLD colleagues demonstrated throughout the Covid-19 lockdown. I was extremely happy to find that even in these adverse conditions, I was part of a supportive team that successfully produced a digital resource, with the aim to help more colleagues. With the power of hindsight, this project has eloquently demonstrated the value (and power) of diverse, collaborative teams to be creative and successfully move forward.



KOSTAS MINAS



### Job Title:

Community Engagement Manager

### Organisation:

Aberdeen Science Centre

## Useful Websites -Unlocking STEM in CLD Practice

### STEM Resources from Education Scotland

#### STEM Activities

[Stem Nation – A summary of STEM resources](#) and [STEM Nation Blog](#)

[Parentzone – Supporting STEM at home](#)

[STEM Central](#)

#### Resources for Education Professionals

[STEM self evaluation and improvement framework](#)

[Science Benchmarks \(2017\)](#)

[Enhancing Professional Learning in STEM 2018/19](#)

[At a Glance –Enhancing Professional Learning in STEM 2018/19](#)

### Other STEM Resources to Explore

[Science for a Successful Scotland](#)

[Counting on a Greener Scotland](#)

[Institute of Physics activities](#)

[Maths Busking](#)

[The Naked Scientist Kitchen Science Experiments](#)

[Opal Explore Nature \(Citizen Science\)](#)

[STEM Ambassador Scheme](#)

[Compound of Interest – Explorations of everyday chemical compounds](#)

[Concept Cartoons – PDFs and PowerPoints for Promoting Scientific Discussions](#)

[The Royal Society of Chemistry – The Water of Life](#)

[The Biochemical Society](#)





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Community Learning and Development  
Woodhill House  
Aberdeen  
Westburn Road  
Aberdeen  
AB16 5GB

[cld@aberdeenshire.gov.uk](mailto:cld@aberdeenshire.gov.uk)

[Aberdeenshire CLD Service](#)

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