Appendix 1

Upstream Battle Education Programme Highlight Report

January 2023

Report by Joe Oxley-Glenister, Education and Learning Officer, Keep Scotland Beautiful

Introduction

Programme Overview

Education forms a key strand of the Upstream Battle campaign; by encouraging young people to *gather evidence* through investigations in their school and local area, *raising awareness* by providing teachers and educators with the resources and knowledge on source to sea litter and inspiring everyone to *take action* to tackle the issue of source to sea marine litter around the River Clyde.

The partnership with Keep Scotland Beautiful to support the Upstream Battle Education Programme has had a measurable impact on pupils, educators, and communities in the West Partnership in 2022/23. The four projects within the programme have so far resulted in engaging with 63 schools, across all education sectors and in all 8 local authorities of the West Partnership, with this number projected to increase with additional programme strands being delivered in the spring term.

The purpose of this report is to provide a summary of the Upstream Battle Education Programme and programme activity between March 2022 and January 2023. The collective impact of the partnership will be demonstrated through the four key projects within the programme.

Marine Litter Art Competition

Pupils from early years, primary and ASN establishments were challenged to research the 'source to sea' pathway of marine litter and explore how litter in their community could end up as marine litter in the sea. Following the investigation, participants were invited to express their findings creatively through models, sculptures, film and poetry.

The objectives included; engaging with a wide range of establishments and sectors, ensuring a positive response from Early Years and ASN establishments, increasing the number of entries to the Art Competition from 2019 (n=20) and hosting an exhibition event where winning entries were invited to showcase their work. The outcomes of the activity are outlined below:

- There were 19 final entries to the competition, of which 4 were from Early Years establishments, 13 from Primary and 2 ASN.
- A total of 326 pupils took part in the project, as over 80% of the submissions were from whole year group entries.
- The activity involved 22 educators directly, and an estimated 80 indirectly, through engagement with the activity within their establishments.
- There was representation from 7 local authorities across the West.
- 24 pupils, representing 5 entries, were invited to attend an in-person exhibition event in Glasgow Science Centre, where they met with the judges of the competition – ocean adventurer Elaine Hopley, Keep Scotland Beautiful Chief Executive Barry Fisher and West Partnership Workstream Lead Officer for Curriculum, Learning, Teaching and Assessment Carol McArdle – along with representatives from the corporate sponsors of the wider Upstream Battle campaign.

Participation in the Marine Litter Art Competition resulted in pupils becoming more aware of their local area and the impact of their actions on the natural environment. Educators also identified how the activity **impacted their practice** by supporting and introducing the themes into the curriculum.

"The activity supported the children's' learning from COP26, where we created a climate pledge, and linked to Global Goal "Life Below Water" which we used in our Eco-School Green Flag application. The children were able to relate the tasks to the local area and school grounds. […] They held a consultation at assembly with everyone in school to renew our Litter Slogan (Code)."

- Karen Scott, P4/5 Teacher, Dalreoch Primary School



As part of the activity educators and young people worked with their local and learning community to identify opportunities to address litter in their area. P6/7 pupils from Giffnock Primary School **improved collaboration with their community** by carrying out a survey:

"We led a survey where we asked the public and parents about their thoughts on litter. We gathered information about: if litter is a problem in Giffnock, if there were any streets or places they felt there was a lot of litter, and how the community should stop littering."

For more information on the Glasgow Science Centre Exhibition, see the news story about the event.

Career-long Professional Learning course

The Career-long Professional Learning Programme aimed to provide the tools and resources for educators to use source to sea litter as a context for integrating STEM learning into their practice. The course was developed to create links to several wider objectives, including delivering on pupils' entitlement to Learning for Sustainability, the Sustainable Development Goals and to introduce the concept of circular economy.

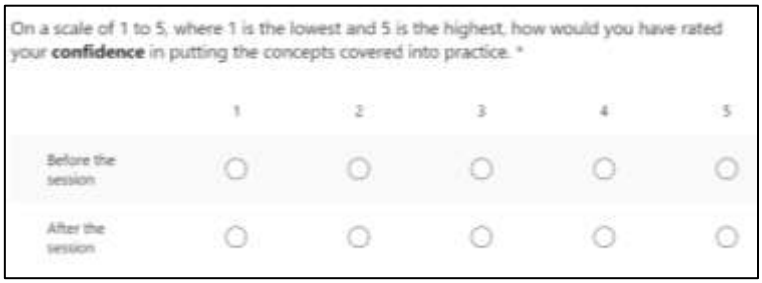
The objectives included; delivering 6 sessions for participants on a range of topics relating to source to sea marine litter, climate change and plastic production, producing a suite of resources which supported 4 self-study tasks and provide participants with materials to impact their practice and involve STEM leads from each of the 8 local authorities. The outcomes of the activity are outlined below:

The programme was delivered through a hybrid learning model combining face to face sessions and online learning, educators further advanced their knowledge and confidence in the topics through self-led study activities. The course provided an opportunity for participants to collaborate across schools, communities, and partners in the STEM family to learn and share best practice.

52 educators registered to take part in the CLPL course from July – September, with 29 attending the first twilight session about the 'issues and impacts of source to sea litter' and how to integrate STEM skills through the topic. Attendance for the sessions was irregular, by the fourth twilight on the subject of 'putting thoughts into actions' only 10 educators regularly participated in the sessions.
See 'Evaluation and Recommendations' on page 8, for discussion on attendance of the CLPL.

Delivery of the 6 (4 online and 2 in-person) sessions was supported by 8 guest presenters, from a range of organisations and sectors including Education Scotland, Keep Scotland Beautiful, Marine Conservation Society, Forth Valley College, Literati Guide to Inverclyde, Clyde River Foundation and Ullapool Sea Savers. From the results of the evaluation, 70% of participants stated that they "strongly agreed", and 30% stated they "agreed", that the involvement of a range of guest presenters **increased their knowledge** in the subjects.

The course set out to provide educators with the **knowledge and confidence** to integrate Learning for Sustainability topics into their teaching practice. This was most evident in the second twilight session, which covered climate change, the Sustainable Development Goals and plastic production. 100% of evaluation respondents recorded participation in the session had resulted in an increase in knowledge and confidence – with 78% scoring '5' on the 5-point scale:



Involvement in the CLPL course was also designed to **support collaboration** within learning communities. In the pre-course survey, when participants were asked to rate their establishment's connection to their cluster with reference to environmental awareness between 1 and 5, the average was 2.1. Following the course when asked the same question, it had risen to 4.8.

STEM the Flow

In this engineering-based design challenge, P6 – S3 pupils developed and applied STEM skills to research and employ ideas to either tackle litter already in the River Clyde or design ways to prevent litter from entering watercourses in the first place. Working as a team, participants were tasked with conceptualising a solution to address these issues, and were supported by STEM ambassadors from local industries to provide advice and guidance.

The objectives included; securing an industry partner to provide support to participants through a mentorship scheme, increasing the number of STEM the Flow entries from 2019 (n = 17) and engaging with establishments across all 8 West Partnership local authorities. The outcomes of the activity are outlined below:

- 52 educators registered an interest in the challenge in October, with 28 of these attending a webinar to hear more about the activity. In total, 32 teams of (up to 6) young people from 21 schools took part in the activity, equating to 128 pupils directly involved in the project.

- During the challenge 6 online workshops were offered to support the participants and improve knowledge and confidence in applying STEM skills to the activity. 112 pupils participated in the online workshops and webinar sessions throughout the challenge, with 73% attending all 6.

- 19 industry STEM ambassadors were recruited from 3 industry partners - BAE Systems, Jacobs Engineering and Scottish Water- to offer 1-2-1 mentor

"I had the pleasure of meeting the two teams from Shawlands Academy partaking in the STEM the Flow Challenge. The students were engaging and well involved, already producing some very innovative and exciting ideas! I am thoroughly looking forward to working with them further, as with a well-structured approach, we could well be looking at some future and forward thinking innovators."

- Dan Lamont, Jacobs Engineering mentor

support to the participants, by providing expertise in STEM skills and confidence in putting concepts into practice. Of the 19 industry mentors who supported the challenge, 17 facilitated regular online video calls with the pupils throughout the project and 8 carried out in-person visits to the school to meet their team and conduct workshop activities.

- To celebrate the conclusion of the STEM the Flow challenge, all the participants are invited to a celebration event and exhibition at the Riverside Museum in February. This will give the participants the opportunity to showcase their work to other teams and representatives from the industry partners. A total of 128 young people, 26 educators and 34 external partners are expected to attend the event, with a potential reach of 18 000 through regional press, local authority engagement and follow-up activities within the schools. The welcome address was given by Mairi McAllen, Minister for Environment, Biodiversity and Land Reform.

The project **encouraged collaboration,** by providing opportunity for young people to work in teams to discuss and design their model. Participants were encouraged to assess their roles and responsibilities within their team and identify one another's strengths. Of the 32 teams who took part in the challenge 26 were made up of mixed ages. Furthermore, St Andrew's Secondary and St Timothy's Primary, Glasgow, used the project as a transition activity, with their team being made up of pupils from both P7 and S1 - highlighting how the activity **supported collaboration across year groups**. *A case study about their project is on page 10.*

The programme also enhanced **practitioners' knowledge and confidence** of implementing STEM activities into their practice.

> *"As STEM lead, it has given me a focus and encouraged me to think outside the box."*
>
> *"It has given me the opportunity to lead my first STEM challenge within the school."*
>
> *"It will make me think more about sustainability within the school and my classroom in the context of STEM."*
>
> - Various responses from STEM the Flow mid-challenge survey

> *"As part of St. Edward's Primary School improvement plan our cluster is to increase pupil confidence and expertise in STEM. I believe this is a fantastic opportunity to promote STEM in school and I look forward to engaging the children in such a purposeful and meaningful challenge."*
>
> - Chris O'Neill, St. Edward's Primary, North Lanarkshire

In the registration questionnaire 74% of educators highlighted how involvement in the project will **increase knowledge and confidence** for young people to apply STEM skills

> *"I think this will be a great opportunity for our young STEM leaders in the class to develop their skills. It will also be a valuable opportunity for children who can struggle with academic learning or who are not very engaged to learn in a different way […]"*
>
> - Ellen Morton, P7 class teacher, Bunsgoil Ghàidhlig Ghleann Dail, Glasgow

> *"I am hoping that this challenge will encourage more of our young people to utilise their STEM skills, which will hopefully lead to more of our young people developing an interest in a career in STEM."*
>
> - Jill Skinner, P6 class teacher, Auchenlodment Primary School, Renfrewshire

> *"STEM the Flow is a fantastic opportunity for our pupils to apply their engineering and problem-solving skills to real life problems. They get to interact and work with STEM professionals and gain an insight into hitherto unknown careers in industry – helping them see that their opportunities and options in STEM really are innumerable."*
>
> - Jaimie Cunningham, STEM Development Officer, Glasgow City Council

For more information on the STEM the Flow challenge please see these news stories from September and October.

School Visits and Engagement Events

Over the course of the programme, a range of engagement activities, such as school visits, family activity days and networking events have assisted in the delivery of the education programme to wider audiences.

- During the spring and autumn term, 20 schools requested a school visit for pupils to engage in classroom and outdoor activities to **raise awareness and improve knowledge** of source to sea litter topics. 14 school visits, across 6 local authorities, were achieved in the same period. This resulted in engaging with 301 pupils directly and over 2000 indirectly, through **increased awareness** of litter and climate action topics in the schools. Pupils took part in 10 litter picking activities in the school grounds and local communities, along with activities to raise awareness such as making displays and posters.

- As part of the Scottish Learning Festival in September, 34 educators registered an interest in the Upstream Battle education programme – details of each of the workstream projects was shared and resulted in 12 educators signing up to the STEM the Flow challenge and 88% registering to join the Eco-Schools Live Lesson on Plastic Pollution.

- 11 schools attended the Upper Primary Live Lesson on Plastic Pollution, reaching 280 pupils directly - based on the national average class size of 25.5 for P4-P7 [1]. However, as many schools stream the lessons in multiple classes, this results in a potential reach of over 3000 pupils.

- During the summer holidays 4 activity days took place at local greenspaces in North Lanarkshire, Glasgow and Inverclyde, involving 59 young people, including youth groups and families. *For details on potential development see page 8.*

- An Eco-Fair and Careers-Fair at Hillhead High School and Riverbank Primary School, respectively, engaged over 200 pupils alone. These activities **improved their knowledge** of litter and waste topics and supported them in **taking action** in their establishment, as outlined in the quotes below:

> *"I learned how cigarettes make their way from pavements into the ocean and that lots of rubbish is flushed down toilets [which is] why plastic cotton buds were banned."*
>
> - S1 pupil, Hillhead High School, Glasgow

> *"We are going to make posters about putting litter in bins in the playground and an Eco-Code for the school to tell everyone about reducing, reusing and recycling."*
>
> - P5 pupil, Riverbank Primary School, Glasgow

Find out more about the school visit activities in this blog.

[1] www.gov.scot/publications/summary-statistics-schools-scotland/pages/5/

Young Reporters for the Environment

Young Reporters for the Environment (YRE) is an international environmental journalism competition, empowering young people aged 11-25 to take an educated stand on environmental issues and give them a platform to articulate these issues through media. YRE as part of Upstream Battle asked participants to focus on source to sea marine litter, by utilising research, presentation and reporting skills and produce a short video, photograph portfolio, or written report.

The objectives included; engaging secondary age pupils in producing a video podcast series as part of YRE, increasing the number of participants in YRE from 2019 (n= 2) and hosting a series of workshops for participants in media skills – such as filming and video-editing. The outcomes of the activity are outlined below:

- Pupils from secondary schools within Glasgow will be working with the Education Officer to produce a video-podcast series called 'Source to Sea and Me', in which they will interview scientists, educators and communicators about topics linking to source to sea litter and marine conservation.

Involvement in the project supported pupils' **collaboration** with peers in advocating environmental conservation and **improved their confidence** in being climate ambassadors, particularly when discussing such topics with adults.

Evaluation and Future recommendations

It is evident from speaking to educators, pupils and facilitators, that the Upstream Battle Education Programme has had a significant impact on the practice, knowledge and confidence for all establishments that have taken part. Overall the project has received widespread praise, referencing particularly its achievement in increasing knowledge and confidence of both young people and educators in how to reduce source to sea litter in their establishment and community.

The Career-long Professional Learning course did not achieve the engagement that the 2019 iteration reached. As highlighted in the feedback, this was due to several factors including; 'time/ work commitment required', 'term workload', 'lack of support in school' and 'other CPD offerings'. Recommendations to address these are:

- **Engage with STEM educators from across the West Partnership local authorities and establishments in the development of the CLPL course**. The model for the 2022 course was adapted from the 2019 version, to include online learning sessions. It was hoped that this would achieve a more inclusive course by supporting a flexible working pattern, removing barriers to travel to in-person events, and reaching a wider audience. However feedback from participants noted that they did not feel as engaged in the online sessions and preferred to watch-back the recording at a more convenient time.

- **Facilitate in-person half-day sessions, which are then supported by self-study tasks.** Consolidating the online training sessions into fewer, longer, in-person sessions would support participants' engagement in the activities and tasks associated with the course, address some of the concerns noted above, and encourage collaboration between colleagues in other establishments. Although the extensive resources which were created to support participants' learning were well-received, feedback outlined that they would have also been valuable to include in the sessions themselves, which would have given participants further confidence to introduce the content into their practice.
- **Gain accreditation for the course.** This would provide participants with a tangible outcome from involvement in the course, which can not only be used to evidence CPD but also illustrate a commitment to influencing practice within their establishment. Accrediting the course, with conditions about commitment to participation, would also address the 'drop-off' rate between sessions and encourage participants to take part in discussion and activities included in the live sessions.

In order to address some of the recommendations outlined above, the Education Officer has initiated conversations with the West STEM Leads, to identify how to develop the CLPL programme for the coming academic year. It is hoped that by a collaborative approach to development, the Upstream Battle CLPL will be tailored further to become a flagship course in LfS CPD for West educators.

The wider engagement activities, including school visits and educational sessions for families, highlighted the value of practical activities, such as litter picks, classroom activities and awareness-days, have a significant impact on the knowledge and confidence of both participants and educators on source to sea marine litter topics. There is a wealth of opportunity to expand this work, to reach more young people and introduce themed activity days in local communities. It was unfortunate that the 2022 'Source to Sea Week of Action' – which planned to include daily engagement events in the Clyde region - had to be cancelled due to industrial action affecting waste services. However this provides the opportunity to develop this project and coordinate engagement events throughout the year, particularly school holiday activity days and those aimed at bringing together learning communities for themed events.

The Young Reporters for the Environment (YRE) programme would also benefit from increased exposure through specialist events and workshops. The feedback from participants outlined the value of showcasing local community action with reference to source to sea litter issues, and potential to highlight the vital role young people play in addressing them – through practical action, advocacy, and awareness. There is opportunity for the programme to be linked with the Upstream Battle Anchor Groups, whereby Young Reporters collaborate with volunteers to bring attention to the work in the community. The participants themselves would most benefit from training or workshops on media skills, such as film-making and video-editing. Indeed, it was the intention at the start if the programme to include this, however it was limited by funding and securing a partnership with a media professional. A

recommendation for future programmes would be to approach West Partnership further education establishments, to support the project – in turn promoting education and career pathways for young people.

Case Study

The case study below outlines St Timothy's Primary and St Andrew's Secondary joint project for the STEM the Flow engineering challenge, identifying how they used to activity as a catalyst to promote transition from the primary to secondary for their pupils.

"Our joint project between St Andrew's and St Timothy's has developed from our on-going cluster partnership. We first established a link in developing and progressing our commitment to Learning for Sustainability during COP26, young people from St Andrew's visited Primary 4 pupils at St Timothy's and took them through a range of activities related to the Climate Crisis. This was a huge a success and provided a platform to continue to develop Learning for Sustainability in our learning community and encouraged us to look for other ways to strengthen this partnership.

The STEM the Flow project presented an excellent opportunity for our pupils to be involved in a joint project as it could be accessed by pupils from P6 – S3, allowing us to create a team rather than having St Andrew's pupils take the lead.

Myself and my colleague at St Timothy's could both see the potential for both our groups of young people to develop skills and learn from each other and take advantage of the resources that each school provides. For example St Timothy's, being a smaller school were able to have input into the challenge from across the school and the young people were able to enhance their leadership roles by sharing their project and challenge design at assembly and pupils at St Andrews are able to take advantage of specialised equipment we have available and learn new skills in using technology to make their prototypes. We are also fortunate in being able to offer this opportunity to our St Timothy's team members who joined St Andrews pupils and with the support of our Technical Department created models of their design.

The logistics of a joint project can be quite challenging when you factor in busy working days, other commitments and setting aside time for the pupils to work on the project. Our starting point for the STEM the Flow design challenge was for all the pupils to meet and have a brainstorm, this followed the first online session which the groups participated in separately but were able to share and discuss their ideas at the brainstorming session. This provided them the chance to meet and decide on some key details of their project including team name, the problem they wanted to address through their design, concept for their design and decide what their roles would be in developing the design. My St Timothy's colleague and I are in regular correspondence on the progress of our half of the team and update regularly on where they are and what they still have to do.

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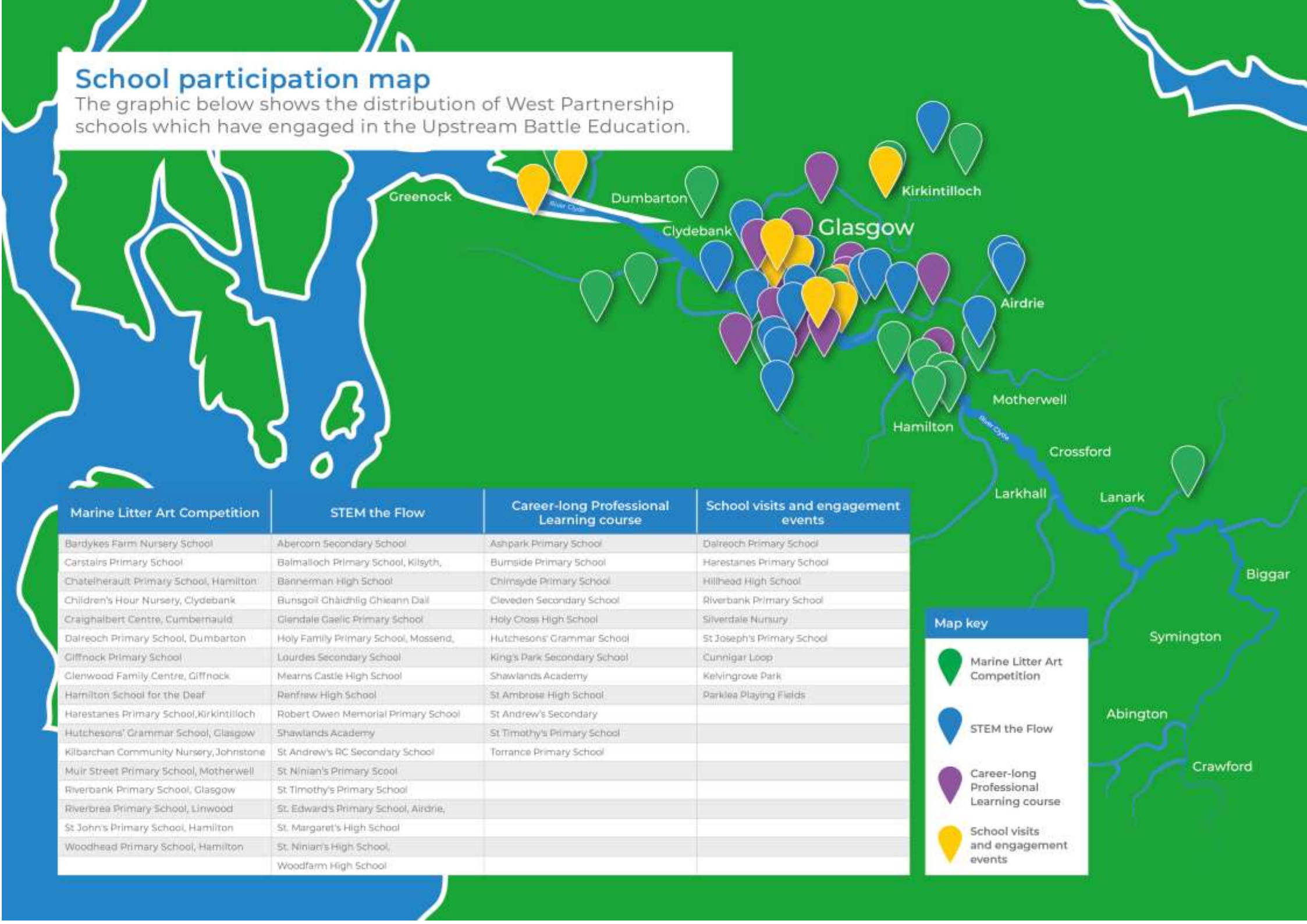
Although our opportunities to meet were limited we endeavoured to make them as productive as possible. This included our first introduction and brainstorming meeting, a joint visit to the location that our STEM the Flow design challenge was being developed for, a visit to the technical department at St Andrews to build our prototypes and Teams meetings with our Mentor to share ideas and get feedback on our design and progress with our report and presentation.

Both me and my college from St Timothy's have enjoyed the process, it has thrown up challenges but we have been focussed on making this a success and developing a template for future joint activities. We have been determined to push forward our school's commitment to Learning for Sustainability and the STEM the Flow design challenge has been the ideal platform for us to develop our own skills and knowledge in this area and as a platform for future collaborative ventures.

- Fiona Harkess, Chemistry Teacher, St. Andrews RC Secondary, Glasgow & Emer Mooney, Class Teacher and STEM Leader, St Timothy's Primary School, Glasgow.

School participation map

The graphic below shows the distribution of West Partnership schools which have engaged in the Upstream Battle Education.



Marine Litter Art Competition	STEM the Flow	Career-long Professional Learning course	School visits and engagement events
Bardykes Farm Nursery School	Abercorn Secondary School	Ashpark Primary School	Dalreoch Primary School
Carstairs Primary School	Balmalloch Primary School, Kilsyth,	Burnside Primary School	Harestanes Primary School
Chatelherault Primary School, Hamilton	Bannerman High School	Chirnside Primary School	Hillhead High School
Children's Hour Nursery, Clydebank	Bunsgoil Ghàidhlig Ghleann Dail	Cleveden Secondary School	Riverbank Primary School
Craighalbert Centre, Cumbernauld	Glendale Gaelic Primary School	Holy Cross High School	Silverdale Nursury
Dalreoch Primary School, Dumbarton	Holy Family Primary School, Mossend,	Hutchesons' Grammar School	St Joseph's Primary School
Giffnock Primary School	Lourdes Secondary School	King's Park Secondary School	Cunnigar Loop
Glenwood Family Centre, Giffnock	Mearns Castle High School	Shawlands Academy	Kelvingrove Park
Hamilton School for the Deaf	Renfrew High School	St Ambrose High School	Parklea Playing Fields
Harestanes Primary School,Kirkintilloch	Robert Owen Memorial Primary School	St Andrew's Secondary	
Hutchesons' Grammar School, Glasgow	Shawlands Academy	St Timothy's Primary School	
Kilbarchan Community Nursery, Johnstone	St Andrew's RC Secondary School	Torrance Primary School	
Muir Street Primary School, Motherwell	St Ninian's Primary Scool		
Riverbank Primary School, Glasgow	St Timothy's Primary School		
Riverbrea Primary School, Linwood	St. Edward's Primary School, Airdrie,		
St John's Primary School, Hamilton	St. Margaret's High School		
Woodhead Primary School, Hamilton	St. Ninian's High School,		
	Woodfarm High School		