

### **Overview of RAiSE**

Raising Aspirations in Science Education (RAiSE) is a programme of The Wood Foundation, Scottish Government, Education Scotland, and participating local authorities which empowers primary practitioners with the skills, confidence, and networks to develop and deliver motivating and exciting STEM experiences.

The RAiSE programme was established in 2016. Following a successful pilot with eight local authorities, RAiSE has now grown to engage with twenty local authorities.

Through a two-year funding and support model, local authorities appoint a Primary Science Development Officer (PSDO) to develop and lead upon a local strategy and implementation of measures to improve the STEM experiences and outcomes for primary pupils.

The PSDOs' interventions are designed to increase practitioner confidence by developing and delivering professional learning opportunities, creating networks and partnerships, and providing a vital central support role for local learning communities.

The network is anchored by the National Education Officer who is employed by The Wood Foundation and based within Education Scotland through a collaborative worker agreement to ensure coordination and sharing of best practice across the network.

The impact and evaluation activity that is embedded within the RAiSE model continues to evidence, at national and authority levels, increased confidence of practitioners; the importance and value of partnerships and networks; the positive impact of 'high-quality' and 'practical' professional learning opportunities; and the positive impact of increased collaboration and co-creation that contribute to developing and delivering more meaningful and relevant STEM experiences for pupils.

### **Executive summary**

This report will profile how the RAiSE investment has acted as a catalyst for high-quality STEM education regionally and nationally, evidenced by three local authorities who have undertaken a full evaluation cycle - West Lothian, North Lanarkshire, and Clackmannanshire. This process was completed in June 2022.

The qualitative and quantitative data within this report further proves the effectiveness of the model, as evidenced in the external analysis of the [pilot](#) and the [legacy report](#).

It should be noted that RAiSE continued to be delivered and have a positive impact for the local authorities in the period covered by this report, despite much of their engagement being delivered against the backdrop of the Covid-19 pandemic.

### **Evaluative framework**

The evaluative structures underpin a commitment to understand and evolve the model and approach at a national level, as well as support local authorities to contextualise the offering and fully realise the opportunities to best support practitioners in their region.

Baseline surveying undertaken by The Wood Foundation enables PSDOs and the local authority to create action plans that are informed by practitioner need and aligned with the RAiSE programme objectives, as well as local and national priorities.



Reflection surveys provide opportunities for practitioners to share the impact that RAiSE and the PSDO has had on their STEM learning and teaching.

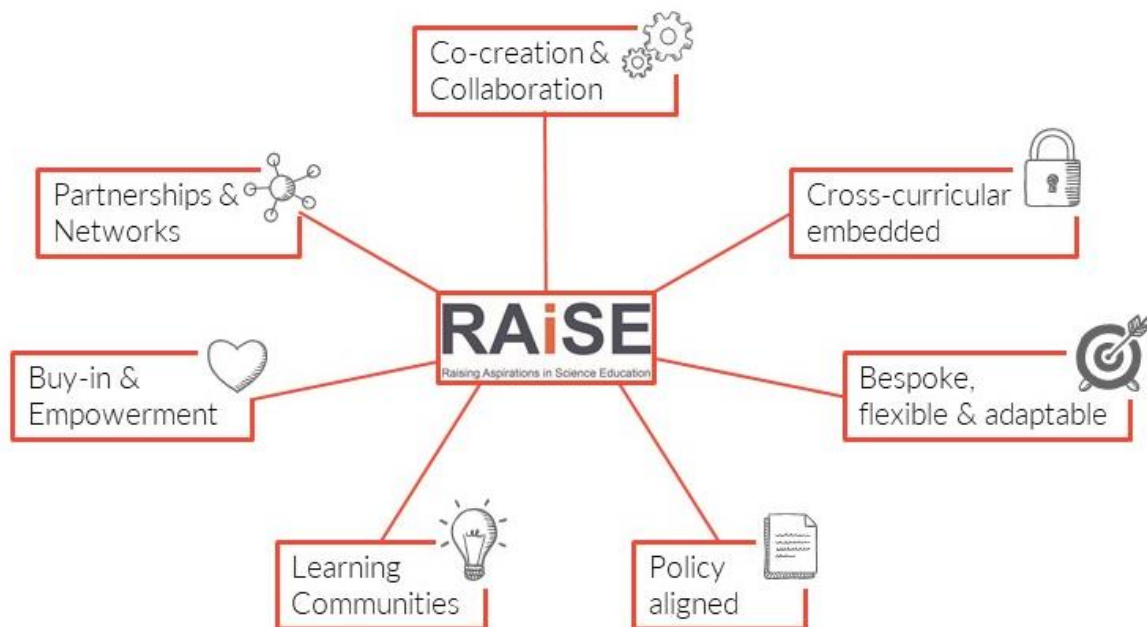
The authorities who have completed the full evaluation cycle have also taken part in mid-point reflections, completed a year into programme delivery. This insight gives PSDOs the opportunity to recalibrate the support they offer, ensuring professional learning experiences continue to be informed by practitioner need and remain relevant to any shift in context.

Confidence in teaching STEM, the promotion of pupils’ aspirations, as well as challenges to, and opportunities for, delivering high-quality STEM learning experiences are addressed in the surveys.

Focus groups and interviews are also undertaken with practitioners, PSDOs, and authorities’ strategic leads to explore in greater depth the impact of the programme to support its ongoing evolution, impact, and contextualised approaches.

Across West Lothian, North Lanarkshire, and Clackmannanshire, **more than 950 survey responses** have contributed to the evaluation process.

The diagram below, which was included in the evaluation of the pilot, highlights the key themes which underpinned the success and sustainability of RAiSE at that time. Recent surveying shows these to remain true as the programme has grown nationally.



## Key findings

PSDOs are a critical component in the implementation and delivery of RAiSE. They have supported practitioners in building their capacity and improving confidence, skills, and abilities to deliver motivating STEM learning experiences. Through engaging with RAiSE, the most recent cohort of authorities (exiting in 2022) reported that **82%** of practitioners **increased confidence, skills, knowledge, and enthusiasm** in relation to the teaching of STEM; and **86%** improved the overall **quality** of learning and teaching in STEM. This figure represents a **10% increase** on the findings shared from those surveyed during the pilot phase of the programme.



These confident practitioners have had a direct impact on learners, with **85%** of practitioners reporting that the programme has enabled pupils to experience **breadth and challenge** in their learning. Furthermore, **80%** of practitioners stated that **pupils' aspirations** have increased regarding STEM careers.

80% of practitioners stated that pupils' aspirations have increased regarding STEM careers.

A fundamental role of PSDOs has been in the development and enhancement of partnerships and networks. It can be evidenced that this is a critical success criterion of RAiSE. The links and relationships built between learners, practitioners, communities, colleges, universities, and industry have created opportunities for shared learning across sectors and for STEM skills and activities to be linked to real-world contexts, enhancing learning opportunities for all.

Both the recent cycle of evaluation and the pilot evaluation report highlighted that the programme had been a success in all local authorities who have engaged. This has been attributed to the model's flexibility and adaptability. Local authorities have developed bespoke plans to reflect their local context, conditions, priorities, and, in more recent times, the challenges posed by Covid-19.

RAiSE adapted to ensure continued impact throughout Covid-19. This is exemplified through the most recent cohort of authorities (West Lothian, North Lanarkshire, and Clackmannanshire) delivering more than **800 professional learning** opportunities which included team teaching, remote online delivery, cluster working, and other events designed for sharing good practice. More than **5400 professional learning hours** (STEM) were delivered by these authorities between August 2020 and June 2022.

**76%**



of practitioners reported that collaboration with colleagues and other professionals has increased.

Sustainability has been a key focus from the outset of the programme. The PSDOs and the National Education Officer have worked closely to ensure that local developments are firmly embedded as effectively as possible. PSDOs have identified and then built the skills of motivated primary practitioners to develop local networks of likeminded practitioners, empowering them to lead STEM learning in their settings and further afield.

This has instilled a culture of peer learning to build confidence and expertise more widely in the system. These networks have continued to evolve and grow and lay the foundations for an impactful, sustainable legacy of shared learning.

The learning networks created by RAiSE have provided space and time for primary practitioners to connect, share, and learn. **76%** of practitioners reported that **collaboration** with colleagues and other professionals has increased, with **76%** stating that they have had more opportunities to **cascade** their STEM learning and teaching to peers. These efforts have supported a more cohesive and strategic approach to STEM across local authorities.



### Impact of Primary Science Development Officer (PSDO)

The PSDO has been cited by all authorities as being integral to achieving STEM objectives. Their strategic focus, innovative approach, responsiveness, and embedded role within central authority teams have been key success criteria shared by practitioners and stakeholders.

The bespoke, flexible, and adaptable nature of the model is clearly evidenced. Each local authority has its own structures for professional learning and programme delivery relevant to their specific context.

For instance, Clackmannanshire has largely taken a team teaching and bespoke professional learning approach. North Lanarkshire's PSDO was placed within the Learning Hub Team, a deliberate position to make STEM collaborative and cross-curricular, being seen as a 'golden thread' across the curriculum to support the delivery of priorities. West Lothian's PSDO enhanced their own coaching and mentoring skills in order to empower practitioners to feel more



confident in areas such as cascading their learning and delivering high-quality professional learning.

RAiSE PSDOs have been responsive to change. The most significant being the measures undertaken to ensure that practitioners and pupils continued to benefit from the RAiSE offering throughout the Covid-19 pandemic.

One example of this in action is West Lothian's 'Sways of Learning' created during lockdown, augmented by online professional learning sessions to deliver the lessons, as well as opportunities for pupils to upload their work and receive feedback. These online resources, shared through a newly established Teams space on the West Lothian STEM channel, contained a range of learning activities and have continued to prove popular, with practitioners citing their effectiveness and impact. There were **7480 engagements** with the resource throughout Term 3 of 2020/21.

In Clackmannanshire, the PSDO developed the [STEMpowered website](#) which engaged 67% of surveyed practitioners. The website provides a 'one-stop shop' for STEM across the authority. In addition to resources, the PSDO provided professional learning videos.

North Lanarkshire has 'capitalised' on the opportunities of 'everyone moving onto Teams'. The STEM Network Microsoft Team was initiated where practitioners could share ideas around home learning. North Lanarkshire now has three established Teams:

- The NL STEM Team – 512 members.
- The NL Learning Hub Team – 2193 members.
- The NL Learning Community Team – 2676 members.

These continue to be well utilised and valued by members to share ideas, updates, and opportunities. This will remain a sustainable legacy of RAiSE.

PSDOs also reflected on their own professional learning highlighting coaching and mentoring opportunities.

The PSDOs' position working across the authority has provided them with greater insight into the varying needs of the practitioners, supporting tailored professional learning provision and getting to 'know their schools'.

"I've really enjoyed gaining that additional professional learning for myself. Having worked at school level, you think you know what the issues are, everywhere. But, actually, it's only once you get that, I suppose, bird's eye view of everything that's going on, you see that actually, different settings have very different needs, and different teachers have different needs."

(North Lanarkshire PSDO, 2022)

The PSDOs have highlighted the importance in 'seeing how everything fits together' as being key in supporting the alignment of strategic and operational activities. The strength of the relationship between the PSDOs and their authority strategic leads, with responsibility for STEM, was highlighted as valuable collegiate learning.

## Policy alignment

Working throughout their authorities and engaging with national networks has provided the PSDOs, and authority partners, with knowledge and insight to support strategic developments that will be sustained beyond the formal RAiSE investment.

An example of this in practice is the placement of North Lanarkshire's PSDO within the Learning Hub Team. This was critical in achieving an effective collaborative authority-wide approach to pedagogy as it allowed the PSDO to work closely with colleagues from across the central team and is supporting integrated developments for North Lanarkshire that will continue to be sustained, whereby STEM can be utilised as a vehicle for delivery of other priorities.



West Lothian's PSDO has been in a position to be 'joining the dots' across the curriculum. Practitioners highlighted that there can be many competing priorities, but with the use of science planners, team teaching with the PSDO and engaging with peers, practitioners felt more confident incorporating STEM into interdisciplinary projects and to deliver on other priorities by providing a real-world context to learning.

"Better awareness of the sciences and how they are so important to understanding and improving our world. Links to many agendas. Developing the Young Workforce/General Education/Learning for Sustainability etc. to develop understanding of these through the lens of a scientist is important."

(West Lothian Primary Practitioner, 2022)

"Having [the PSDO] in post has helped us to join it all up and get the nursery, primary and secondary and look at having a pathway that flows."  
(West Lothian School STEM Lead, 2022)



PSDO's have developed resources that complement the educational priorities and objectives of not only individual local authorities but national priorities and drivers.

Practitioners highlighted the opportunities to engage with networks across all levels. Clackmannanshire early years practitioners have benefitted from having a greater understanding of 'how it [STEM] progressed straight up to secondary school'.

Clackmannanshire's PSDO coordinated a 'STEMpowered Community' involving practitioners across the 3-18 sectors to create a more 'joined up' and cohesive approach to STEM across the authority. A similar approach was deployed in West Lothian.

PSDOs contributed to a bank of [STEM through Stories](#) planners which are freely available. These are interdisciplinary plans based on books addressing many curriculum areas, demonstrating STEM's role in delivering upon priorities rather than as an 'additionality'.

West Lothian practitioners consistently highlighted the benefits of the [Science Pathway](#) resource that is an amalgamation of the RAiSE [Science Planning Resource](#) and West Lothian's pathway document, signposting to resources, practical kits and resources that can be borrowed from the authority and partners.

"I think it's confidence, would be the biggest impact, raising confidence of themselves, it's in actually being able to carry out open ended investigations."

(West Lothian STEM Partner, 2022)

North Lanarkshire's PSDO worked with the Digital Pathfinders, who are responsible for leading digital learning locally, to create detailed technology planners to support the delivery of computing science and computational thinking outcomes. These are intended to be launched through the Digital School Network, alongside new Digital Curriculum Pathways next session (2022/23). In addition, the PSDO and Pedagogy Team collaborated in the creation and cascade of the North Lanarkshire Science Pathway. This universal offer contains lesson plans and digital resources to support Early, First and Second Level outcomes. Alongside the planners, they will continue to support high-quality learning and teaching, contributing to the RAiSE legacy.

As previously noted, Clackmannanshire, North Lanarkshire, and West Lothian were all engaged in RAiSE during the Covid-19 pandemic and within the recovery period when schools were focussing on literacy, numeracy, and health and wellbeing. In response to this, the PSDO network created context planners with an interdisciplinary learning focus demonstrating STEM opportunities which enhance literacy and numeracy, alongside other relevant aspects of the curriculum.





## Practitioners

In each of the pilot authorities, PSDOs, teachers, headteachers, and local authority strategic leads reported that RAiSE had effectively developed primary teachers' **confidence, skills, and capacity**. This measurement has continued to increase, with **82%** of practitioners now reporting an increase in these areas. Improved confidence was referenced 43 times throughout interviews and focus groups with this current cohort. Teachers reflected on how having access to high-quality professional learning tailored to their needs as well as access to a range of online resources curated and evaluated by the PSDOs has improved their confidence to teach STEM.

"I've been able to connect with all the STEM leaders within my cluster. We've got our own little team as well. We've been able to work as a closer group, to share ideas and promote challenges and to work with the high school as well. Without the STEM leaders programme, we couldn't have identified each other in order to do that, especially with Covid."

(North Lanarkshire School STEM Lead, 2022)

"I'm also the probationer supporter within my school so that's really given me strength to help support them kickstart their confidence and career in STEM, quite early."

(West Lothian School STEM Lead, 2022)

Direct, meaningful, and relevant professional learning input to model and support good practice, team teaching, as well as through the development of teams of teachers in learning communities has created the legacy of impact with practitioners. PSDOs have developed networks of partner organisations, educational institutions, and practitioners that can offer additional expertise and resources. This has included utilising social media, Teams, and online networks to share ideas and good practice.

The baseline surveys with the three authorities showed that:

- **67%** of teachers sought to build their confidence, skills, knowledge, and enthusiasm in relation to the teaching of science/STEM.
- **72%** sought to promote opportunities for pupils to experience breadth and challenge in their learning, applying their skills and knowledge in new contexts.
- **68%** sought to promote pupils' aspirations regarding STEM careers.
- **72%** sought to increase the number of science/STEM activities aligned with the experiences and outcomes of Curriculum for Excellence.
- **72%** sought to support pupils to develop their skills for learning, life, and work with relevance of science/STEM both to them and society.

**68%**



of practitioners sought to promote pupils' aspirations regarding STEM careers.

The mid-point surveys showed drops of between 19% and 30% of those seeking the support outlined above, evidencing that the first year of activities provided through RAiSE were having a clear impact. This check-in point allowed for PSDOs to recalibrate their offering and construct their second-year action plans.

The programme reflection surveys of practitioners revealed:

- **82%** had received support in building their confidence, skills, knowledge, and enthusiasm in relation to the teaching of science/STEM.
- **85%** had received support in promoting opportunities for pupils to experience breadth and challenge in their learning, applying their skills and knowledge in new contexts.
- **80%** had received support in promoting pupils' aspirations regarding STEM careers.



- **82%** have received support in increasing the number of science/STEM activities aligned with the experiences and outcomes of Curriculum for Excellence.

**75%** of practitioners reported that they have received support in developing methods to effectively **monitor, assess, and report** learners' progress and achievement regarding science/STEM.

"One of the really interesting sessions that [PSDO] did was on assessment. I think that's something that people felt a bit unsure about, you know for Maths you get testing, and there's all the assessments for literacy, but science, it's a bit harder to kind of get a handle on that. So, I think, giving staff confidence in that has really improved the quality of experience for learners."

(North Lanarkshire STEM Lead, 2022)

**84%**



of practitioners have received support in developing pupils' skills for learning, life, and work with relevance of science/STEM both to them and society.

Practitioners highlighted how impactful the 'hands-on' and 'practical' professional learning opportunities have been. By PSDOs modelling lessons and activities, practitioners were able to collaborate to confidently adapt the learning to meet their own contexts.

"By deepening my own understanding, I have been able to support our teaching staff to develop their own capacity. By auditing and re-evaluating our school curriculum, lessons are now well-resourced and more relevant for the pupils."

(West Lothian Primary Practitioner, 2022)

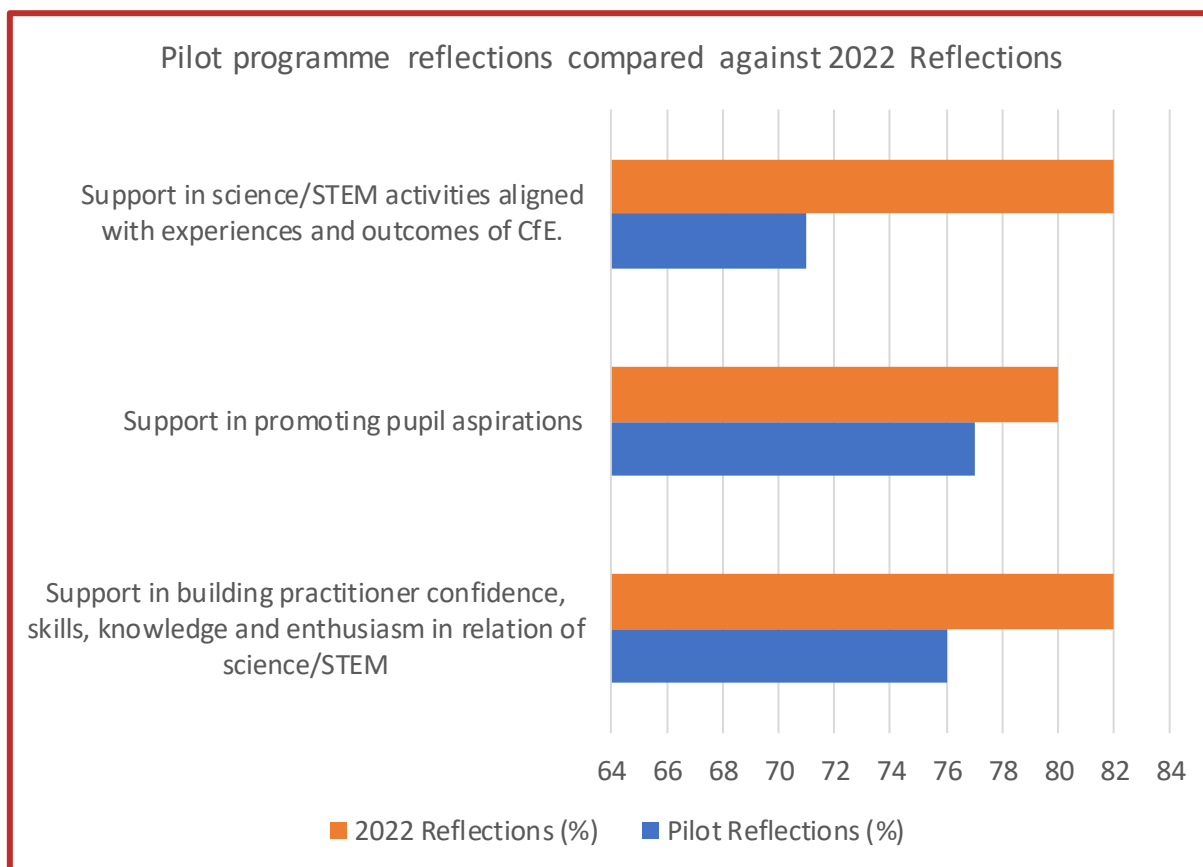
West Lothian's best-attended sessions were of a themed nature e.g., STEM links to Halloween, Christmas, and Easter as it allowed practitioners to 'dip their toe in the water'. It was during delivery of these sessions that the PSDO realised that practitioners needed more in-depth learning concerning the broader topic of STEM and the related understanding and confidence which they identified as lacking. The 'Friday 3 step' approach was devised. These are three sessions, held over the course of a school term, based on a particular theme such as 'what is STEM?'

- Session 1 – share and learn around background and relevant information
- Session 2 – practitioners receive support within their settings
- Session 3 – the group come back together to share their practice

These opportunities have encouraged practitioners to 'take responsibility' for STEM learning. STEM Leads in West Lothian highlighted how they have developed leaderships skills 'being more comfortable at other levels', 'supporting planning for practitioners', and through the 'provision of resources'.

With consideration to the continued development of the RAiSE programme, there can be further reflection on the impact when comparing the data captured within this evaluation study with that captured during the pilot. The following chart clearly evidences that RAiSE has continued to support practitioners in key aspects, with more practitioners describing a positive impact from their engagement.





## Pupil engagement

Across the evaluative activity, practitioners consistently reported the positive impact that RAiSE activity had on their confidence and skills regarding STEM education which resulted in improved pupil engagement with STEM and associated improved problem-solving skills and articulation.

“The LEGO stuff I took part in, I’m able to talk about it. It tied in really nicely, especially with the literacy outcomes because the children do a presentation at the end of it so children that traditionally would absolutely dread the idea of needing to stand up and do a solo talk or anything like that, were really quite keen and hands on. They wanted to be involved in the presentation and wanted to say a wee part of it as well.”

(North Lanarkshire Primary Practitioner, 2022)

A Scottish Government press release (Scottish Government 2017) stated that principal ambition of RAiSE, is that “early exposure to innovative science in the primary school classroom will encourage young people into STEM careers where there are significant skill gaps and many great job opportunities”. It was challenging to ascertain this as a success during the pilot due to the longer-term nature of the investment. However, there is a growing body of evidence as the programme expands and becomes more established, particularly in the qualitative accounts of practitioners, that RAiSE activity is continuing to positively contribute to awareness and aspiration of pupils’ perceptions regarding STEM related careers. **80%** of practitioners stated that their authority’s PSDO has supported them in **raising the aspirations** of pupils regarding STEM careers.





“Increased awareness on my part has resulted in more high-quality learning and teaching experiences for the children. I took part in an online awareness raising for STEM Ambassadors in Scotland Week and as a result arranged for two STEM Ambassadors to visit our class and work with the children, answering their questions about engineers and carrying out a STEM workshop with the children.”

(North Lanarkshire Primary Practitioner, 2022)

Teachers discussed how RAiSE professional learning has supported them to develop STEM activities that excited learners across the curriculum to enhance their **interest and engagement (85%)**.

“Our learners have stated they are excited about STEM lessons and enjoy the opportunity to put into practice what they have learned. They are engaged and motivated in their learning experiences and are building their problem solving and independence skills.”

(West Lothian Primary Headteacher, 2022)

PSDOs working with teachers were able to observe and receive feedback about the impact of their work on learners’ STEM engagement and skills. PSDOs working in classrooms further developed the relationship with teachers and their ability to understand particular schools’ contexts, informing tailored support. This was particularly prevalent throughout Clackmannanshire.

“The result is our children across different stages being provided with meaningful and engaging scientific learning experiences.”

(Clackmannanshire Primary Practitioner, 2021)

“This helped me see how to differentiate activities to extend the understanding of the pupils in my class.”

(Clackmannanshire Primary Practitioner, 2021)

Practitioners (**72%**) at baseline in West Lothian, North Lanarkshire, and Clackmannanshire highlighted that they would like support with promoting opportunities to support pupils to develop their **skills for learning, life, and work** with relevance of science/STEM both to them and society. By the mid-point reflections, this figure dropped to **53%**, evidencing the support that was provided in the first year. Throughout the reflections, **84%** of those surveyed reported that they had **received support** from their PSDO in this regard.

“Children were very motivated to engage with learning about topical science issues of plastic pollution. They participated very enthusiastically in our whole school litter survey. Children are very passionate about their world and how we can be the future caretakers of our planet.”

(North Lanarkshire Primary Practitioner, 2022)

West Lothian reported that development of high-quality interdisciplinary opportunities using STEM as a context which has positively impacted pupils’ ‘confidence’ and ‘self-esteem’.

“But we can see the impact in children’s confidence, self-esteem as they are trying new things and definitely in that perseverance”.

(West Lothian School STEM Lead, 2022)

Initially, **72%** of practitioners highlighted that they would like support in ensuring pupils experience **breadth and challenge** in their learning, applying their skills and knowledge in new contexts. **85%** reported they have been supported with this and are now able to provide further opportunities to pupils.



“I have used my engagement with RAiSE to involve pupils to lead learning in classrooms. We have created STEM boxes for each class to develop creativity /engineering skills. Our School STEM Ambassadors meet weekly to plan and organise resources for STEM activities in classes.”

(North Lanarkshire Primary Practitioner, 2022)

Practitioners with an increased confidence are not only comfortable in implementing activities within their own settings but noted that they are able to share and **cascade** their learning and ideas to peers and their wider networks (**76%**). Pupils have had greater access to STEM opportunities, linking their learning to real-world situations. For example, science fairs and escape rooms in North Lanarkshire have been used as primary transition projects.



### **Networks and partnerships**

Developing and enhancing partnership working and networks have facilitated improvements in schools’ STEM capacity. The networks that have continued to develop, even throughout the Covid-19 period, have been an important factor in establishing the sustainability of RAiSE activities and impact. The networks have encouraged practitioners within and across schools to work together to share and support each other, developing professional learning communities. The networking has empowered motivated practitioners to lead STEM professional learning in their schools and clusters.

The PSDO role in creating and anchoring these efforts has been fundamental to its impact. They have mobilised the sharing of good practice ideas, collaboration, and co-creation of lessons and resources. The PSDOs and their networks have worked purposely to embed sustainability through a particularly challenging period.

The PSDOs have used a range of social media such as twitter and Facebook, as well as Google Classrooms, Teams, GLOW, and newsletters to support and enhance networking, communication, and sharing of ideas.

“[PSDO] is very able to link you up with other people doing similar projects because he’s more aware being in the wider council area, I feel we get stuck in our own cluster...[PSDO] has helped us to branch out... and work with different colleagues across the authority.”

(North Lanarkshire School Stem Lead, 2022)

The networks that have been established and developed have empowered practitioners to connect and share their learning. The development of Teams spaces has become a key resource in sustaining the collaboration, connectivity and networks and will continue following the RAiSE investment. Across North Lanarkshire and West Lothian, there are more than **950** practitioners accessing their authority’s **‘STEM Teams’** space.

PSDOs have dedicated significant time to building and establishing relationships with practitioners, authority leads, and partners. The relationships have cultivated an environment where it is possible to foster and develop STEM teaching and learning together – a collaborative learning group. The strength of relationships between PSDOs and strategic leads responsible for STEM have brought the operational and strategic elements together.

PSDOs have benefitted from access to a national network, contributing and learning from sharing practice, professional learning, and access to national partnerships. The programme of RAiSE training days involving PSDOs and their peers was seen as particularly valuable for sharing ideas, peer learning, and promoting inter-authority connectivity. The learning and skills gained are cascaded and shared across their authorities.



PSDOs have dedicated significant time to building and establishing relationships with practitioners, authority leads, and partners.



A good example of this is that Clackmannanshire and West Lothian PSDOs co-created and led a STEM leadership course which was broadened out as an offering across the Regional Improvement Collaborative (RIC). The North Lanarkshire PSDO wanted to deliver something similar so was able to seek advice and guidance to support the development of this within North Lanarkshire based on the success from the Forth Valley West Lothian RIC delivery and feedback. More than **70** practitioners signed up to the **STEM Leaders** course in North Lanarkshire which empowered them to lead STEM in their settings, develop and deliver initiatives, as well as share professional learning. The sessions cover areas such as learning, teaching and assessment; engineering; measures and outcomes; and literacy.

Partners have contributed to projects which have collaboratively grown and developed. In West Lothian, a pilot woodwork project for early years practitioners was introduced which has laid foundations for a pathway of tools use throughout the BGE. Ten settings were initially selected, and professional learning was developed and delivered in partnership with a woodworking specialist. The PSDO and Early Learning and Childcare Development Officer visited all the settings to review the woodwork and learning environment and provide appropriate links to extension activities. This project will now involve multiple partners and is providing a progression pathway based on the success of this pilot.

PSDOs have built partnerships with STEM Ambassadors, local science centres, museums, universities, colleges as well as local businesses. They have also worked with SSERC to develop professional learning opportunities that build on the experience of the Primary Cluster Programme.

Partners highlighted how the PSDO has ‘opened their eyes to what the key STEM requirements in primary school are’, made connections with schools to resources, and acted as the key source for partners to understand the curriculum and how they might support the needs of primary schools. For example, in West Lothian, Heriot Watt delivered professional learning session on Spheros for a school cluster as part of a transition project.

Partners who have worked strategically across a number of RAiSE authorities include:

<b>Partner</b>	<b>Engagement</b>
Easter Bush Science Outreach Centre at the University of Edinburgh	Pondering Pond Life
Energy Skills Partnership & Institution of Engineering and Technology	First Lego League
Global Underwater Hub & Aberdeen Science Centre	Subsea Channel

It should be noted partnerships with businesses were impacted during Covid-19 and in-school events have not resumed to pre-pandemic levels. However, PSDOs have worked with partners to enhance their digital offer through pre-recorded videos and live Q+A sessions to continue to bring learning to life virtually.

One of the key characteristics of RAiSE has been the extent to which the PSDOs and National Education Officer have developed local, regional, and national networks that have facilitated collaborative partnership to address the programme objectives. This process has been one of the main factors in its success, contributing to facilitating the mobilisation of knowledge, resources, and sustainability.





### Sustainability

From the outset PSDOs, local authority colleagues, and the National Education Officer have considered the post-investment sustainability of the approach.

The most recent cohort of authorities have recognised how the expertise and support of the PSDO have been key to success of STEM across authorities, with all continuing to fund a central STEM Officer role.

West Lothian will retain the PSDO part-time, and they will also hold a STEM Lead role in a school. North Lanarkshire will continue investing in a full-time STEM Development Officer role for a further two years within the Learning Hub team. Clackmannanshire will continue to invest in the STEM Officer role in a part time capacity.

The cross-curricular integration of STEM and articulation of STEM with other curriculum areas such as literacy, numeracy, and health and wellbeing has supported the sustainability of the investment. This in turn has supported practitioners' confidence incorporating STEM as a vehicle for delivery, instead of as an add-on. This will continue beyond the lifetime of the programme.

PSDOs highlighted the importance of having local networks and ambassadors to further support making developments more systemic and sustainable across their local authorities. Building upon existing processes and structures also supported the implementation of activities by the PSDO and are more likely to be sustained.



### Moving forward

It is clear that practitioners at all levels, partners, and stakeholders continue to significantly benefit from the RAiSE programme. In order to sustain the legacy of the investment, the following outlines recommendations based on the findings garnered during the evaluative process.

- PSDOs continue to gather data from practitioners to ensure that action plans and activities are informed by practitioner need, priorities and aligned with local authority strategies.
- Continue the momentum with schools and networks by providing bespoke support tailored to practitioners' needs, requests, and opportunities.
- Maintain the high profile of STEM to grow current work and promote the relevance of STEM.
- Continue to offer a diverse range of high-quality professional learning opportunities, in particular practical activities that build practitioner confidence.
- Continue to develop partnerships as authorities move forward from the Covid-19 recovery period. Learning from established processes currently being sustained in exited and exiting authorities should be considered and shared to build and support self-sustaining partnerships.
- To continue to develop and increase STEM capital, developing more opportunities for family learning.
- Current survey data highlights that there is a focus nationally on Technology and Engineering. Authorities should consider how they incorporate this into their professional learning and support model.
- PSDOs, stakeholders, and practitioners should continue to collaborate, co-create, and engage with local and national networks, across schools, authorities, and Regional Improvement Collaboratives.
- The authorities should continue to engage with the Education Scotland STEM team, as well as opportunities offered by the RAiSE network as appropriate.





## **Conclusion**

This report clearly illustrates the key components that are critical to ensuring that STEM learning and teaching are integrated and embedded throughout primary schools by empowering primary practitioners.

With increased confidence and established networks to share ideas and cascade their learning, practitioners are ensuring that pupils have more opportunities to experience breadth and challenge in their STEM learning. Professional learning opportunities with hands-on experiences, accessing real life contexts, have supported learning communities, and provided cross-curricular learning opportunities.

Co-creation and collaboration with PSDOs, partners, and peers have provided a more equitable offer of STEM learning and teaching for pupils across authorities. This has supported a more 'joined up' approach to STEM.

This report clearly identifies the value of having local coordinators and advocates in place to ensure that developments are both systemic and sustainable across local authorities. The importance of a coordinated and nationally informed network is also critical to success with the delivery of high-quality professional learning experiences essential to develop practitioners' confidence. Those with a focus on integration of STEM with a local focus or context are key.

These components, alongside the development of strategic partnerships outline the building blocks for RAiSE sustainability.

