

STEM Professional Learning

Findings from the Annual STEM Practitioner Survey 2017/18

Community learning and development

May 2019

Overview

Education Scotland issued an online survey to community learning and development (CLD) practitioners in July 2018. The aim of the survey was to gather information from CLD practitioners about the access they had to professional learning and to identify their professional learning priorities. The information gathered will help Education Scotland monitor progress in the provision of professional learning over the lifetime of the STEM Education and Training Strategy. A total of 139 survey responses were received during the period 26/07/18 to 11/01/19.

This survey was based on the 2017 STEM practitioner survey, which sought to establish a baseline regarding:

- Key sources of professional learning accessed by practitioners
- Which providers practitioners use to access professional learning
- What practitioners perceive as barriers to engagement with professional learning
- The learning themes practitioners believe would have the most impact on their practice
- Professional learning priorities for practitioners

Respondents were also asked to provide their 'one big, bold idea' for improving access to high-quality professional learning in STEM for practitioners across Scotland.

Further surveys across this sector will be carried out as part of the ongoing reporting requirements of the STEM Education & Training Strategy. This will be done in such a way as to ensure parity and consistency of approach with analysis of other sectors such as professional learning providers and educational practitioners in the early learning & childcare, primary, secondary and ASN sectors.

Key findings

- The majority of respondents are from local authorities (69.7%).
- Most respondents were either adult learning practitioners (32.4%) or community learning/community capacity building practitioners (25.2%).
- Respondents currently access their professional learning through a variety of sources; the most popular being online sources (8.6%), collegiate working within their workplaces (7.19%) and support/training organised by local authorities/other organisations (7.19%). A significant amount of respondents indicated that they had little or no access to professional learning (43.88%).
- Respondents currently access their professional learning from a range of different providers. Local authorities account for 22.3% of this provision, with other national organisations (12.94%) and science centres (8.6%) also providing popular.
- Perceived barriers to accessing professional learning include:
 - Too many demands on time/other competing priorities (85.6% of respondents rated this as a 'high barrier' (52.51%) or 'medium barrier' (33.05%))
 - Lack of funding (84.16% of respondents rated this as a 'high barrier' (53.95%) or 'medium barrier' (30.21%))
 - Difficulties in being released from work (69.66% of respondents rated this as a 'high barrier' (23.02%) or 'medium barrier' (46.64%)).
- There is broad support within organisations for practitioners to engage with professional learning in STEM, with 41% of respondents indicating that this was not a barrier for them.
- Professional learning themes seen as most useful by respondents include:
 - Awareness about the resources and professional learning available for STEM (55.39% see this as having high impact)
 - Understanding how to incorporate STEM subjects into current practice (52.50% see this as having high impact)
 - Using STEM as a context to increase skills in numeracy (47.48% see this as having high impact).
- Professional learning priorities in STEM include:
 - Hands-on/face-to-face professional learning from a specialist organisation (47.48% saw this as a high priority)
 - An online professional learning resource for CLD practitioners including videos, examples and case studies. (45.32% saw this as a high priority)
 - A programme of online tutorials that could be watched live or on catch-up (43.88% saw this as a high priority).

Survey questions and responses

Responding organisations

Responses by sector	Completed %	
Public sector	Local authority staff	97 (69.7%)
	Education Scotland	2 (1.2%)
	NHS Scotland	1 (0.72%)
Third/community sector	22 (15.8%)	
Further education	3 (2.16%)	
Higher education	1 (0.72%)	
Volunteers	2 (1.2%)	
Not specified	11 (7.91%)	

Role of respondee

Adult learning practitioner	45 (32.4%)	Volunteer	3 (2.16%)
Community development/Community capacity building practitioner	35 (25.2%)	Youth worker	14 (10.1%)
Service manager	13 (9.3%)	Other	23 (16.5%)
Third sector practitioner	3 (2.16%)	Not specified	3 (2.16%)
'Other' comprised:			
- Education practitioners (3-18)			7 (5.03%)
- Education practitioners (FE/HE)			3 (2.16%)
- Library practitioners			5 (3.59%)
- Education Scotland			2 (1.2%)
- Local/national managers			4 (2.87%)
- Generic CLD role			1 (0.72%)
- Senior practitioner			1 (0.72%)

How professional learning is accessed

External organisation coming into my workplace	8 (5.75%)
Attending an externally-organised course outside my workplace	9 (6.47%)
Collegiate working within my workplace	10 (7.19%)
Collegiate working across the area I work	4 (2.87%)
Formal learning through a university/college course	9 (6.47%)
Online learning	12 (8.6%)
Practitioner network	6 (4.31%)
Support/training organised by my local authority/other org	10 (7.19%)
Support/training organised by Education Scotland	2 (1.2%)
I don't have access to professional learning in STEM	61 (43.88%)
'Other' responses: <ul style="list-style-type: none"> I haven't accessed STEM learning but could via partner agencies or online training None Not aware of any CLD-focused STEM professional learning It's not particularly relevant Don't do it as professional learning Personal research and study I have not accessed any professional learning as yet, but I feel that an online course would probably be the best way to do it. I feel this would fit better with my current duties and priorities Local science centre provides some in Aberdeen 	8 (5.75%)

Organisations approached for STEM profession learning

My local authority	31 (22.3%)
National organisations	18 (12.94%)
Education Scotland	11 (7.91%)
Colleges	8 (5.75%)
Science centres	12 (8.6%)
SQA	4 (2.87%)
No response	19 (13.66%)
Other	36 (25.89%)

Barriers in accessing STEM professional Learning

Barrier	No Barrier	Medium Barrier	High Barrier	No response
No funding available for STEM professional learning	15 (10.79%)	42 (30.21%)	75 (53.95%)	7 (5.03%)
Difficulties in being released from work	32 (23.02%)	64 (46.04%)	32 (23.02%)	11 (7.91%)
Lack of support within my workplace for STEM professional learning	57 (41.00%)	42 (30.21%)	28 (20.14%)	12 (8.6%)
Too many demands on my time/other competing priorities	12 (8.63%)	46 (33.09%)	73 (52.51%)	8 (5.75%)

Impact of opportunities on professional learning

Option	No impact	Some impact	High impact	No response
Awareness of how STEM learning may be relevant in a range of CLD settings	14 (10.07%)	59 (42.44%)	64 (46.04%)	2 (1.43%)
Awareness about the resources & professional learning available for STEM	6 (4.31%)	53 (38.12%)	77 (55.39%)	3 (2.16%)
Understanding how to incorporate STEM subjects into my current practice	13 (9.3%)	51 (36.69%)	73 (52.50%)	2 (1.43%)
Using STEM as a context to increase skills in numeracy	14 (10.07%)	54 (38.84%)	66 (47.48%)	5 (3.59%)
Understanding of the concepts and knowledge to underpin science in individual/group learning	17 (12.23%)	68 (48.92%)	49 (35.25%)	5 (3.59%)
Understanding of the concepts and knowledge to underpin technologies in individual/group learning	13 (9.3%)	60 (43.16%)	63 (45.32%)	3 (2.16%)

STEM professionals learning priorities

Option	Not a priority	Medium priority	High priority	No response
An online professional learning resource for CLD practitioners including videos, examples and case studies	22 (15.82%)	52 (37.41%)	63 (45.32%)	2 (1.43%)
A programme of online tutorials that could be watched live or on catch-up	19 (13.66%)	55 (39.56%)	61 (43.88%)	4 (2.87%)
Access to an online network of practitioners to share practice, ideas and resources	25 (17.98%)	64 (46.04%)	43 (30.93%)	7 (5.03%)
Taking part in National Network events	41 (29.49%)	61 (43.88%)	33 (23.74%)	4 (2.87%)
Local and national showcase events to share ideas and practice	16 (11.51%)	75 (53.95%)	46 (33.09%)	2 (1.43%)
Hands-on/face-to-face professional learning from a specialist organisation	13 (9.3%)	59 (42.44%)	66 (47.48%)	1 (0.72%)
Hands-on/face-to-face professional learning from a specialist organisation	13 (9.3%)	59 (42.44%)	66 (47.48%)	1 (0.72%)
Visits to other centres with interesting practice	24 (17.26%)	71 (51.07%)	43 (30.93%)	1 (0.72%)
Professional learning provided by a university or college	39 (28.05%)	61 (43.88%)	35 (25.17%)	4 (2.87%)
Professional learning provided by third sector or national organisations	25 (17.98%)	72 (51.79%)	39 (28.05%)	3 (2.16%)
Professional learning provided by Education Scotland	24 (17.26%)	67 (48.20%)	44 (31.65%)	4 (2.87%)

Ideas to improve access to high quality STEM professional learning

The survey asked practitioners if the National STEM strategy was to take forward one “big, bold idea to improve access to high-quality professional learning in STEM for practitioners across Scotland, what should it be?”

There was a large variety of suggestions which can be broken down into the following broad areas where development and support was needed:

Partnerships

- A joint strategy for delivery in partnership with local colleges.
- I am really looking forward to the opening of a proposed Aviation Skills Partnership venture at Dundee Airport. This might have real promise for the future if CLD practitioners can be involved.
- To enhance the chances of success fund free access to Scotland's Newton Rooms for approved partnerships delivering learning and engagement for the first two areas of activity.

Funding

- Properly fund CLD services via local government funding so we can have the time and resources to develop our practice.
- Provide some ring-fenced funding to support STEM learning and find more people who can be STEM champions to promote the benefits of STEM to everyone.
- A fund for practitioners to bid into to attend STEM training events within Scotland.
- Digital inclusion, digital upskilling and money for training staff.
- Funding for appropriate equipment, training and a tailored programme

Online support

- Develop an online professional learning resource.
- Creating online tutorials and ideas to take STEM into community settings such as libraries where children can pursue a variety on STEM activities for pleasure.
- To be able to access the professional learning online, make it exciting and innovative.
- To create a series of short online courses that are free/reasonably priced.
- Use i-Develop as the training platform.

Youth work and/or adult learning

- Range of local opportunities for youth workers/youth centres to attend skills based programmes and have specialists visit venues in local communities.
- Anything linked to numeracy development for youth and adult learning.
- Celebrity endorsement of STEM learning to raise profile amongst parents and adult learners.
- The big idea might be just to show where the jobs are in the STEM related fields and the need to understand maths in general, which could be helping the adults of the next generation to have a better grasp on maths.
- Fun, hands-on taster sessions for existing and potential students among adult learners.

Training

- A clear pathway for professionals to be able to access STEM training main provider – hands on face to face & funding to help access on going STEM training.
- Enhance FE/HE/Tertiary/RIC activity in CLD professional improvement by incentivising those organisations/structures to provide short course training in STEM/CLD intersection subjects designed to upskill practitioners whilst also embedding the notion that community learning and development is fundamentally reliant on and supportive of STEM literacy.
- A sustained training programme for practitioners to build and improve their knowledge.
- Availability of training.
- Work place training – face to face.

Digital

- Identify commercial organisations trading in STEM fields, particularly those working at intersections eg carbon-free/carbon neutral construction allied with environmentally sympathetic design or digital

technology allied with assistive technology or environmental science/tourism/community enhancement. Incentivise such organisations to work with CLD practitioners such that the full extent to which STEM is or should be embedded in everything that successful communities do is understood, appreciated and communicable by practitioners to their clients. The aim being to stimulate active engagement and demand in STEM explicitly at CLD level.

- Digital inclusion, digital upskilling and money for training staff.
- I often find that working outwith the traditional Community Learning and Development sector in my local authority, my role with the libraries, will not be included in this push towards building STEM skills. We shouldn't miss out on the initiatives outlined in the STEM strategy to introduce a similar award such as the Digital Schools Award.

Coding

- Training, materials and time to allow practitioners and volunteers to run engineering clubs, coding clubs and other STEM related activities to encourage involvement.
- Widen the reach to include work done in other sectors for example libraries where there is a national offer of coding clubs and other stem learning opportunities such as Makerspaces, lego clubs etc.

Science

- Invest in a nationally recognised suite of professional learning qualifications akin to the Into Headship qualification eg. science teaching for early years; science teaching for P1-P4; science teaching for P5-P7; science teaching for S1-S3. Likewise for teacher training: there is a need to formalise the experience student teachers have, especially those tasked with teaching STEM. Too much on the job training leads to variability. Need to have a formal training programme in ITE that is content rich as well as full of practical workshops.
- Make science more accessible for all.
- The local science centre (Satrosphere) is a good place to go & I enjoyed the one night I went where I met a robot company. Maybe need celebrity attraction or something else in science week specifically.
- Also I would advocate taking into account STEAM as science and the arts are very closely aligned in delivering quality learning
- We need to demystify science.

Numeracy and mathematics

- Anything linked to numeracy development for youth and adult learning.
- Implement a programme that engages with SQA, Employers and Third Sector Organisations to develop a numeracy / maths BGE and Senior Phase curriculum that addresses the weaknesses in numeracy and maths and provides content that is valued by all stakeholders.
- At a literacies level it is delivering or teaching basic maths. Therefore, algebra, calculus, trigonometry is not delivered or taught at this level, even if you know algebra, calculus trigonometry. The big idea might be just to show where the jobs are in the STEM related fields and the need to understand maths in general, which could be helping the adults of the next generation to have a better grasp on maths.
- Need to support the recommendations of Making Maths Count Report.

Engineering

- Involve industry-experienced engineers!
- Training, materials and time to allow practitioners and volunteers to run engineering clubs, coding clubs and other STEM related activities to encourage involvement.

Poverty

- STEM needs to help community groups to deal with generational issues around poverty.

Accreditation

- Identify third sector/social enterprise organisations working in STEM fields and fund them to establish practitioner-focused professional learning projects with accreditation.
- Accreditation of learning/training for professionals.
- The creation of an accredited / certificated course for practitioners.

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