

Science, Technology, Engineering & Mathematics

Consultation on a Strategy for Education & Training RESPONDENT INFORMATION FORM

Please Note this form **must** be completed and returned with your response.

Are you responding as an individual or an organisation?

- Individual
 Organisation

Full name or organisation's name

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We will share your response internally with other Scottish Government policy teams who may be addressing the issues you discuss. They may wish to contact you again in the future, but we require your permission to do so. Are you content for Scottish Government to contact you again in relation to this consultation exercise?

- Yes
 No

Questionnaire

Consultation Question – Definition

1. Do you agree with the definition provided of STEM for the purposes of this Strategy?

The definition seems appropriate, though some definitions of STEM include among the essential skills the ability to collaborate in teams.

Consultation Question – Aims and Priorities

2. Do you think the aims of this Strategy and the four priority themes are the right ones to address the challenges identified?

Yes, we do think these are the right themes. We are particularly pleased that ‘equity’ has been included as one of the priority themes. The strategy refers to underrepresentation of particular groups, including ‘care leavers’. We suggest this category needs to be broadened to include ‘looked after children and care leavers’. While it is true that care leavers (i.e. formerly looked after children) need to be better included and have greater access to a broader range of opportunities, there is also a need ensure that younger looked after children get the right kind of help, without delay, to learn the important STEM building block skills of numeracy and literacy, especially where they fall behind because of placement moves and other disruptions.

Consultation Question – Outcomes

3. Are these success criteria right? If not, tell us what criteria we should use instead.

We do not think that ‘understanding the importance and relevance of STEM’ is an adequate and measurable outcome. It is possible to understand the importance of STEM but not to be in a position to take advantage of opportunities. It would be better to express this outcome more actively to indicate the intention to provide support for young people and their families to help them to *participate* in STEM learning opportunities. We would also like to see looked after children and care leavers identified as a priority group for measurable improved access to STEM qualifications and Modern Apprenticeships. This would be consistent with the corporate parenting responsibilities (set out in [Part 9 of the Children and Young People \(Scotland\) Act 2014](#)) of the key agencies involved in implementing the Strategy.

The reference to gender balance is potentially problematic. The assumption is that this means supporting more women to engage in STEM. However, it is important also to consider gender representation *within* priority groups, such as care leavers and people with disabilities, as well as globally across STEM. For example, there is evidence from HESA/SFC data shared with CELCIS, that among college and university students who declare a looked after background women are represented in higher proportions than men, particularly in university undergraduates. The respective proportions for 266 undergraduates declaring a care background in Scotland in 2013/14 were 57% female and 43% male.

Consultation Question – Scope

4. Do you think the scope of the Strategy is right? Tell us if you think it should exclude something or include anything else. For example, should it include training and development that employers provide for their workforce?

The scope of the Strategy seems right. The main formal programmes of learning are listed, though it might be useful to acknowledge the potential value of harnessing more informal learning opportunities which have a role in influencing young people to engage with STEM. For example, volunteer mentoring programmes and activities provided by third sector organisations which, with some support and co-ordination, could encourage engagement in STEM. The Science Centres represent a valuable community resource, though easy access is affected by geography.

Consultation Questions – Current actions

5. Give us your views on whether you think the actions already underway across the sectors on STEM fit well with the Strategy and will contribute positively to it.

It might be better to group these current activities against the four themes of the Strategy. In that way it would be possible to identify gaps in provision.

6. Tell us about activity currently ongoing – either included in this document or not – that you think could be adapted or stopped and why.

Nothing to add.

Consultation Questions – Implementation

7. Do you agree with the principles set out for implementation?

Yes, though we would add a fourth principle: a commitment to a public communications strategy, particularly taking into account the needs of priority groups.

8. What else should Government do to ensure a more coherent approach and maximise impact?

Nothing to add.

Consultation Questions – Proposed Actions

9. Overall, do you think this Strategy is clear and action focused? Do you think that the actions that we propose to take nationally will achieve the aims and intended

outcomes?

We think the proposals for increasing the numbers of STEM teachers and improving the STEM components of teacher education are appropriate. We suggest that there is a need for more resource to be allocated to helping children and families from the most disadvantaged backgrounds to access STEM opportunities and to get support where there are gaps in their STEM-related skills. Such opportunities need to be addressed in creative and interesting ways, perhaps with incentives attached, such as guaranteed access to Modern Apprenticeships when appropriate entry qualifications are gained.

10. Will this Strategy improve equity of outcomes? If not, tell us what else it should include, in particular for women and girls and other groups of people – disabled people, care leavers and minority ethnic communities.

There are many good ideas contained in the Strategy. For example, we applaud the plan to increase the number of Modern Apprenticeships. We would like to see a specific commitment to improve the uptake of Modern Apprenticeships, across the full range of occupational areas, by looked after young people and care leavers, and ring-fencing of places. CELCIS has recently published a briefing intended to encourage active steps towards providing greater access to Modern Apprenticeships for looked after children and care leavers¹.

We are surprised that the Strategy does not show how it is consistent with existing legislation such as corporate parenting under Part 9 of the Children and Young People (Scotland) Act. The Strategy does not make reference to Scottish Government policy advice in respect of looked after children and care leavers, such as *Our Family Firm: A Working Framework for Community Planning Partners and Employers*²; or the recommendations of the Commission on Widening Access³. Useful reference could also be made to the Scottish Care Leavers' Covenant which highlights complexities and suggests actions to support care leavers with particular reference to employment and education, amongst other areas.

As we said in our response to Q.3, it is important not to regard sub-groups of the population as homogeneous. Thus, while care leavers share the experience of having been looked after, the nature of that experience is highly variable and that variance is noticeable in attainment and positive destination statistics. For example multiple placement, unsurprisingly, is related to poorer outcomes. As, in our response to Q. 3, we also challenge the assumption that improving gender equity in STEM will always mean addressing low uptake by women, and in some contexts the need will be to consider how to provide support and design approaches which appeal to young men.

¹ Morton, L. (2016) *Inform: Modern Apprenticeships: Opportunities for employees with a care experience*, CELCIS: Glasgow

² Scottish Government. (2011). *Our Family Firm: A Working Framework for Community Planning Partners and Employers*. Edinburgh: Scottish Government.

³ Scottish Government (2016) *A Blueprint for Fairness: The final report of the Commission for Widening Access*. Edinburgh: Scottish Government

11. What could schools, colleges, universities, community learning and development, the voluntary sector, science engagement providers and museums do to support

the areas for action?

With specific reference to ‘inspiration’, we suggest that the broader formal and informal education sectors could engage actively with existing youth mentoring and coaching programmes, such as the MCR Mentoring / Young Glasgow Futures programme, and the National Mentoring Programme led by Inspiring Scotland. Such activity would be a way of demonstrating a serious commitment to corporate parenting.

12. What could professional organisations and bodies and third sector organisations do to support the areas for action? This includes, in particular, the General Teaching Council for Scotland, the CLD Standards Council, the teaching unions and representatives and the Learned Societies.

Nothing to add.

13. What more could science centres and festivals do to complement and enhance STEM formal education, to inspire scientists of the future, and to ensure their activities support those of the Scottish Government and its agencies.

Nothing to add.

14. Should this Strategy identify more actions for particular sectors, for example in relation to workplace and work-based training and development? Please make suggestions on what these actions could be.

We would like to see explicit reference made to corporate parenting responsibilities, and, as we said in response to Q. 10, active encouragement of the principles espoused in *Our Family Firm*. This might involve the government and its agencies in working closely with employers, employers’ representatives, and training organisations to consider ways in which significantly more looked after children and care leavers can be helped to gain employment opportunities, especially Modern Apprenticeships, and to be supported in skillful ways that improve rates of retention.

Consultation Question – STEM Improvement Framework

15. Tell us what you think about this Improvement Framework. How can we best ensure uptake of this Framework in early years learning settings, schools

and clusters?

The references to 'first cycle' and 'second cycle' in the Framework imply understanding of improvement methodology. It might be best to be more explicit about what this means to engage the widest audience. But the fact that there is already fairly wide understanding of this approach (e.g. through the Early Years Collaborative), will help schools and clusters to develop meaningful, locally relevant improvement plans for STEM. We also advocate providing direct support for staff, particularly including mentoring and coaching, evidence-based approaches to professional learning which appear to be missing from the present Framework.

Consultation Question – Collaboration

16. Tell us what you think of our proposal for developing a model of collaboration between schools, colleges, universities and employers. How should we now take this forward?

Nothing to add.

Consultation Question – STEM ambassadors:

17. Tell us what you think of our proposals for a Scottish STEM ambassador network.
How should we now take that forward?

We think that coaching and mentoring (not only peer-to-peer) approaches should be encouraged. These are likely to be more effective than 'bringing inspirational role models into schools,' for the simple reason that the former approaches can be better tailored to individuals' needs.

Consultation Questions: Partnerships

18. What other groups, organisations or people need to be involved in delivery of this strategy?

From our perspective, in promoting the interests of looked after children and care leavers, we advocate inclusion of third sector agencies working with looked after children and care leavers, as well as college/university networks which are beginning to emerge to facilitate corporate parenting responsibilities, such as the Edinburgh and Lothians Collaborative Hub for Care-Experienced Learners.

19. Tell us about what you are doing in your organisation, establishment or

community that supports the aims and priorities of this Strategy.

CELCIS has provided Modern Apprenticeships for care leavers. Although these have been in administrative roles, rather than STEM, we are able to share experiences of the advantages to the organisation and the particular implications for mentoring approaches, HR procedures and training which can be generalised across all employment areas.

20. What could employers do to attract and retain more diverse STEM talent?

We would like more employers to embrace the *Our Family Firm* principles and to offer employment opportunities to looked after children and care leavers, especially Modern Apprenticeships. This may require willingness to collaborate with partners (third sector and local authority) in creative ways to help young people from disadvantaged backgrounds to gain entry-level STEM competence to allow them to apply more confidently for STEM training and employment opportunities