

# THE LEARNED SOCIETIES' GROUP ON STEM EDUCATION

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Mr Ken Muir  
Chief Executive and Registrar  
General Teaching Council for Scotland  
Clerwood House, 91 Clermiston Road  
Edinburgh  
EH12 6UT

19 December 2019

Dear Mr. Muir

## **GTCS consultation on Professional Standards and a new Professional Code**

I write to you as Chair of the Learned Societies' Group on Scottish STEM (Science, Technology, Engineering and Mathematics) Education (the LSG). The LSG brings together the learned societies and professional associations to identify and promote priorities for STEM education in Scotland. The LSG comprises the: Association for Science Education; British Computer Society, The Chartered Institute for IT; Edinburgh Mathematical Society; Institute of Physics; Royal Society of Biology; Royal Society of Chemistry; Royal Society of Edinburgh; and the Scottish Mathematical Council. While all of these organisations are individually active in their own right, the LSG provides a forum for them to come together to discuss and take action on shared interests and concerns.

A key area of work for the LSG is teacher education. Our aim is to see teachers equipped with the requisite knowledge and skills to provide high-quality STEM experiences in the classroom. A teacher who is both enthusiastic about the STEM subjects and adept at teaching them can serve as a springboard for students' continued interest in these subjects. Unfortunately, primary teachers in particular continue to report low confidence in their ability to teach the STEM subjects, which can have negative implications for student performance and attitudes towards the STEM subjects. It is therefore critically important that Initial Teacher Education (ITE) programmes are fit for purpose in adequately preparing student teachers to enter the workforce and teach confidently across the STEM subjects. Qualified teachers must also be offered regular and meaningful opportunities to improve their skillsets and understanding throughout the duration of their teaching careers. Career-long professional learning (CLPL) is also a key determinant of teacher empowerment, facilitating a better understanding of how to allocate time and resources, structure learning, adapt to change and participate in decision making at the school level and beyond.

In respect of the above, please see below our observations on the revised Professional Standards and new Professional Code as proposed. We have organised these according to theme for ease of reading.

## ***ITE and CLPL***

1. The LSG has previously called for more stringent minimum entry requirements (i.e. at least one SCQF level 5 qualification in science) to be instated across ITE to provide a more solid foundation from which primary teacher candidates can develop their STEM subject knowledge. This requirement should be complemented with more intensive exposure to learning in the STEM subjects during ITE itself, including in the form of subject-focused mentorship opportunities. However, these measures would still only apply to new entrants, meaning that existing primary and secondary teachers must have the assurance of access to high-quality and continuous CLPL to build and reaffirm their competence in the STEM subjects. Such CLPL should again feature subject-specific learning to promote a deeper understanding of the material. This aligns with the new draft standard for CLPL which includes signposting areas for professional development, including deep subject knowledge. Teachers should also be supported in pursuing more informal development opportunities to gain further subject knowledge as well as pedagogical knowledge.
2. In these respects, it is important that there is coherence between the Standards and the Professional Review and Development and Professional Update processes to ensure that primary teachers and secondary teachers in the STEM subjects are able to access CLPL in STEM concepts, content and pedagogy.

## ***Professional Values***

3. There is some concern about how the section on Professional Values and Professional Commitment has been removed from the Standard for Provisional Registration (SFPR), Standard for Full Registration (SFR), Standard for Career-Long Professional Learning (SFCLPL) and Standard for Leadership and Management (SFLAM) and is now solely presented within the new Introduction document. These values are fundamental to understanding and applying the Professional Standards and Code and reiterating them across the documents would emphasise their significance. Further, within the Introduction document, it is difficult to ascertain from the infographic and table provided how these values translate into the associated outcomes, which in turn makes it difficult for practitioners to determine if they are successfully enacting these values.

## ***Professional Standards***

4. In general, the LSG is content with the Standards' statements as presented. However, it was remarked that certain Standards could benefit from revised wording to avoid the risk of them being used to promote or excuse particular outcomes. Specifically, SFR 2.1.3 "the use of digital technologies when possible" could be interpreted in one of two ways: either the use of digital technologies is *preferable* to the use of other technologies or that the use of digital technologies is inevitably *impossible* at times, due to limiting factors such as a lack of access or resources. Both conclusions are ultimately problematic in that it is teachers who should be making pedagogical decisions on what strategies and technologies are appropriate in any given instance and so the statement "the use of digital technologies where appropriate" would perhaps better reflect this.

## ***Professional Code***

5. Similar to the section on Professional Values, the Professional Code as it is currently presented leaves it open to misinterpretation. Specifically, it is unclear which element of the document actually constitutes the "code" in question. This ambiguity then makes it difficult to assess the extent to which teachers may or may not be meeting it, potentially leading to unhelpful conflicts when differing conclusions are reached. The Code of Professionalism and Conduct (COPAC) set out clearly

numbered sections of the expectations of a registered teacher and it would be helpful if the current draft could revisit this approach.

### *Evaluation*

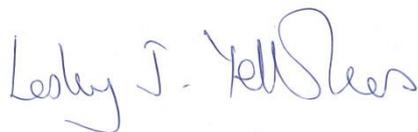
6. Following on from the above, it is uncertain how teachers will be measured against the Standards and Code. This again increases the likelihood of conflict arising when holding teachers accountable to them.

### *General*

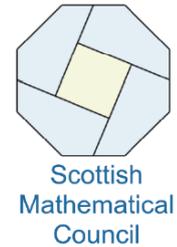
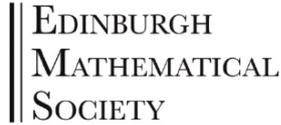
7. The LSG welcomes the reference to STEM alongside literacy, numeracy, and health and wellbeing as warranting greater focus in the draft Introduction section 3.4 Leadership.
8. If Professional Standards and a Professional Code are to exist, it stands to reason that it should be possible to fulfil them. For example, it is expected that teachers “participate in and/or lead collaborative practitioner inquiry (individual or collaborative) to inform pedagogy, learning and subject knowledge” as well as “critically examine with a range of educational literature, research and policy to make meaningful links to inform and change practice” (SFCLPL 3.3). However, teachers can only be held to this standard if they are ensured the time, space, resources and support from educational leadership in order to do so. In other words, the Standards should be compatible with the realities of the current education system and indeed the profession, or else teachers must be given access to CLPL opportunities that facilitate teachers meeting these Standards.
9. Splitting the draft Standards and Code across several documents might make them less effective in practice. While it is important to make the documents accessible to teachers and others, this must be balanced with the need to ensure information is not taken out of context nor onerous to locate.
10. For consistency, it would be helpful if the Standards statements within the SFLAM were numbered in the same way as those across the SFPR, SFR and SFCLPL documents.

I hope the above has been useful in setting out the LSG’s position on the draft Professional Standards and a new Professional Code and its connection to our aspirations of ensuring high-quality teacher education in the STEM subjects. We would be pleased to discuss our response further should you consider that productive. To this end, we would be grateful if you could follow up with the LSG’s secretary, Daria Tuhtar, [dtuhtar@therse.org.uk](mailto:dtuhtar@therse.org.uk), 0131 240 5006

Yours sincerely,



Professor Lesley Yellowlees CBE FRSE  
Chair of the Learned Societies Group



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