



**European Committee  
of the Regions**

**SEDEC-VI/049**

**23rd commission meeting, 2 April 2019**

## **DRAFT OPINION**

**Commission for Social Policy, Education, Employment, Research and  
Culture**

### **Strengthening STE(A)M education in the EU**

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Rapporteur: **Csaba Borboly (RO/EPP)**  
President of Harghita County Council

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This document will be discussed at the meeting of the **Commission for Social Policy, Education, Employment, Research and Culture** to be held from **11 a.m. to 5.30 p.m. on Tuesday 2 April 2019**. To allow time for translation, any amendments must be submitted using the online tool for tabling amendments (available through the Members' Portal: [Error! Hyperlink reference not valid.](#)) no later than **3 p.m. (Brussels time) on Wednesday 20 March 2019**. A user guide is available at [Error! Hyperlink reference not valid.](#)

**Draft opinion of the Commission for Social Policy, Education, Employment, Research and Culture – Strengthening STE(A)M education in the EU**

**I. POLICY RECOMMENDATIONS**

**THE EUROPEAN COMMITTEE OF THE REGIONS**

1. welcomes the recognition by a large proportion of European local and regional authorities of the fact that significant opportunities and responsibilities lie before them when it comes to defining a coherent and integrated approach to STEM (science, technology, engineering and mathematics) education and the development of skills and abilities relating to these subjects, which are increasingly found all over the world and at every level of education;
2. points out that while the growth of innovation-intensive economic sectors such as ICT, robotics, automation, technical research and development, logistics and various engineering activities is expected to continue in a sustained way, it could be hampered by inappropriate implementation of STEM education;
3. considers that while, in the case of STEM, there are certainly decades-old, tried and tested teaching methods, the material conditions for which are in place, there is nevertheless a need for further action given the importance of having more teachers able to cross the traditional boundaries between disciplines and foster a project-based educational approach and in light of the fact that in many cases, the need to invest in this field has not so far been reflected in the national educational policies of the Member States;
4. emphasises that STEM education does not mean simply passing on the various scientific subjects or disciplines separately. One of the basic principles is that their teaching must be planned and delivered not in isolation, but as part of a coherent cross-subject approach under a system which in practice is multi-disciplinary;
5. notes that, according to various studies, in the medium to long term the number of jobs in sectors related to STEM will rise significantly, and in almost all Member States unemployment rates are lowest in these sectors;
6. attaches importance to the fact that, given the results in STEM subjects at international level, it is worth focusing not only on higher education but also on laying the foundations for these subjects at all levels of primary education. This can be achieved by broadening the range of basic skills that should be available to everyone to include basic STEM skills, and particularly technical literacy;
7. considers that, in keeping with the principles of subsidiarity and multi-level governance, thought should be given to how the local and regional level can help to fill existing gaps in terms of harmonisation between STEM-related training systems, workforces and jobs;
8. with a view to subsidiarity and decentralisation within the Member States, calls for a full awareness of the role that local and regional authorities who finance or in some other way support

education networks unquestionably have in this process, since they play a key role in mobilising EU funds;

9. considers that STEM-related initiatives, strategies, action plans and public-private partnerships implemented at local and regional level can play an important role in bridging the gap in development between the various regions. In many cases, increasing the number of STEM-related jobs does not require the use of expensive traditional infrastructure, and there are also many opportunities, especially in vocational education and adult training, for organising specialised, short-term training courses, sometimes only a few months in duration. Local and regional authorities may have a positive impact in this regard, given that the presence of a competent STEM workforce is a decisive factor in determining the competitiveness of a region. Treating STEM subjects as a local and regional priority, as well as prioritising collaborative initiatives and investment with regard to their development, can go a long way towards limiting the harmful effects of the brain drain by offering career opportunities that are suitable for the active STEM workforce;
10. considers that professional bodies and organisations that are active and well established at local and regional level should also be involved in planning and carrying out training courses; this would increase the effectiveness of the STEM-related approach and promote local and regional values and interests;
11. urges the European Commission, when it verifies compliance with its country-specific guidelines for 2021-2027 cohesion policy investment, to see if the Member States are giving due priority to supporting STEM-related initiatives and if they are taking the measures needed to ensure that the necessary investment is drawn from Member State or EU funds. This is also because it must be clarified, during the 2021-2027 period, which educational solutions and opportunities are most likely to contribute to preserving a knowledge-based economic model in Europe that can develop successfully while also being inclusive and supportive of equal opportunities;
12. considers that it is now time for the European Commission, alongside the ambitious European Education Area plans, to give priority to ensuring that all the STEM-related conditions are also met with regard to Erasmus, ESF+ and direct programming, which is not carried out through Member States' operational programmes, particularly at the local and regional level;
13. recommends that a white paper be drawn up under its guidance, in partnership with the European Commission and with the direct involvement of local and regional authorities, on the development and more effective use of STEM. This could go a long way towards improving the coordination of local and regional efforts, and in particular to ensuring that cohesion policy strategies linked to sustainable urban development strategies and integrated territorial strategies, together with smart specialisation and competitiveness strategies, have a more cohesive effect;
14. is concerned at the fact that three major shortcomings have been observed in relation to STEM in recent decades:
  - i. there is a Europe-wide shortage of teachers specialised in STEM at all levels of education;

- ii. in many cases, students' interest in STEM is decreasing;
  - iii. the results produced by the education system are not always in line with the needs of the labour market;
- 15. believes however that these issues should not be seen as a problem but as a practical challenge to be met, and that an effective response hinges on appropriate planning, setting up local and regional partnerships and cooperation with employers; furthermore, the fact that only nine Member States currently have a national STEM strategy underlines how urgent it is for this question to be managed optimally at local and regional level;
- 16. points out that the proportion of women in these training courses and professions remains low, meaning not only that an enormous amount remains to be done in terms of gender equality, but also that this field and these professions offer potential for growth. In order to act more effectively, it may be necessary to introduce career guidance programmes and targeted study and apprenticeship grants;
- 17. also detects significant opportunities for regional and civic universities in disseminating STEM, as STEM-related university courses and disciplines can be internationalised, which can make them particularly attractive for ambitious universities. This is also due to the fact that reorienting STEM, i.e. developing teamwork, facilitating inter-professional synergies, supporting and increasing the availability of internships, strengthening project-based education and increasing the participation of disadvantaged or disabled students or those from minority backgrounds in education and training activities, can transform regions, universities and vocational schools into pioneers when it comes to ensuring that they are able to seize the opportunities offered by STEM at an early stage;
- 18. emphasises that if STEM courses are organised at local and regional level, specific local traditions and knowledge can be incorporated into the available training, which in turn will also increase opportunities and skills for local and regional authorities in this regard;
- 19. points out that STEM subjects could also benefit from specific local and regional solutions and traditions through the incorporation of elements related to the arts, creativity and design and that, at the same time, this addition provides STE(A)M with real opportunities for innovation in teaching and training which - if successfully applied - could also enable Europe's regions to set a good example across the world, giving additional impetus to their growing capacity for innovation, since incorporating the arts could give a major boost to creativity in this field;
- 20. considers that, firstly, it would be helpful to extend STEM- and STE(A)M-related awareness and promotion activities to parents and, secondly, that it is crucial to identify the best methods for attracting children's attention in an appropriate way to STEM subjects at a very early stage, starting at the pre-school level;
- 21. calls on the European Commission to take the necessary measures concerning the continuation and renewal of the Bologna process and work leading to the automatic recognition of qualifications, and urges it to ensure that the question of the rapid mutual recognition of qualifications and training in the STEM and arts areas be addressed urgently and appropriately;

22. encourages the European Commission, using the available tools and in agreement with local and regional partners, and including regional and civic universities, to frame universally-applicable standard curricula for STEM and STE(A)M subjects at different levels of education, in which partial knowledge would not be taught as separate disciplines, but an appropriate number of hours of STEM or STE(A)M courses would be given under a holistic, project-based approach. This would make it possible to introduce STEM more easily and flexibly, even as a local education programme;
23. urges the European Commission and Eurostat to fine-tune the data-gathering method in line with their relevance, to ensure that education systems in which STEM are taught as separate disciplines and systems based on a holistic interpretation of STEM can be clearly distinguished, and to clarify the overall regional dimension, which will also make it easier to prepare local and regional STEM strategies.

Brussels, ...

## II. PROCEDURE

<b>Title</b>	Strengthening STE(A)M education in the EU
<b>Reference(s)</b>	
<b>Legal basis</b>	Article 304 TFEU
<b>Procedural basis</b>	Own-initiative opinions – Rule 41 b) ii) of the Rules of Procedure
<b>Date of Council/EP referral/Date of Commission letter</b>	
<b>Date of Bureau/President's decision</b>	4 December 2018
<b>Commission responsible</b>	Commission for Social Policy, Education, Employment, Research and Culture
<b>Rapporteur</b>	Csaba Borboly (RO/EPP)
<b>Analysis</b>	January 2019
<b>Discussion in commission</b>	2 April 2019
<b>Date adopted by commission</b>	2 April 2019
<b>Result of the vote in commission (majority, unanimity)</b>	
<b>Date adopted in plenary</b>	Scheduled for 26 and 27 June 2019
<b>Previous Committee opinions</b>	<p>Building a stronger Europe: the role of youth, education and culture policies<sup>1</sup></p> <p>Strengthening European Identity through Education and Culture<sup>2</sup></p> <p>Modernising school and higher education<sup>3</sup></p> <p>Investing in Europe's youth and the European Solidarity Corps<sup>4</sup></p> <p>A new skills agenda for Europe<sup>5</sup></p> <p>Recognition of skills and competences acquired through non-formal and informal learning<sup>6</sup></p> <p>Opening up Education<sup>7</sup></p> <p>European higher education in the world<sup>8</sup></p> <p>Rethinking education<sup>9</sup></p>

<sup>1</sup> COR 3952/2018.

<sup>2</sup> COR 6048/2017.

<sup>3</sup> COR 3139/2017.

<sup>4</sup> COR 851/2017.

<sup>5</sup> CDR 4094/2016.

<sup>6</sup> CDR 3921/2014.

<sup>7</sup> CDR 6183/2013.

<sup>8</sup> CDR 5961/2013.

<sup>9</sup> CDR 2392/2012.

	Erasmus for All <sup>10</sup> Promoting the active citizenship of young people through education <sup>11</sup>
<b>Date of subsidiarity monitoring consultation</b>	—

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<sup>10</sup> CdR 400/2011.

<sup>11</sup> CdR 173/2007.