European Economic and Social Committee

OPINION

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Digitalisation, Al and Equity – How to strengthen the EU in the global race of future skills and education, while ensuring social inclusion

[Exploratory opinion at the request of the Finnish Presidency]

Rapporteur: **Tellervo KYLÄ-HARAKKA-RUONALA**
Co-rapporteur: **Giulia BARBUCCI**

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Request by the Finnish Presidency of the Council	Letter, 07/02/2019
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Section responsible	Employment, Social Affairs and Citizenship
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Outcome of vote (for/against/abstentions)	118/0/0

1. **Conclusions and recommendations**

1.1 Skills and competences play a key role in ensuring the EU's success in global competition with respect to digitalisation and AI. In addition to ensuring high-level talent, there is a need for society as a whole to be equipped with the necessary understanding, knowledge and skills for the "AI era", so as to make full use of the overall potential and to keep everyone on board.

1.2 The EESC calls on the EU to take a comprehensive approach to education and training policy, considering its two-way linkages with other areas such as data, research, innovation and industrial policy, as well as economic and social policy. As this also requires the necessary public and private investment, the EESC repeats its recommendation for reforms to create a favourable environment for private-sector investment and for the implementation of a "golden rule" allowing funding from Member States' budgets for socially and economically productive investment that does not threaten future budget sustainability[1].

1.3 The EESC finds intensive cooperation between Member States to be crucial for success in the global race. Networking of European universities should be encouraged to enhance AI-related competences. Cooperation in the field of vocational training also needs to be enhanced. The EESC calls for an increased allocation of EU funds to support the necessary reforms, cross-border exchange and cooperation in education and training, including retraining workers to overcome the digital transition.

1.4 As stated in the European Pillar of Social Rights, the EESC emphasises that access to continuous and lifelong learning must be an individual right for everyone in order to cope with digital and AI developments, shape progress and keep "humans in command"[2].

1.5 The Committee suggests developing an EU strategy to enhance continuous, learner-centred learning, with digitalisation and the deployment of trustworthy AI at its heart. The strategy should outline the necessary arrangements to meet the objective set out in point 1.4, taking into account differences in national systems.

1.6 The EESC deems that the AI era requires a strong foundation in cross-cutting skills such as logical reasoning, critical thinking, creativity and interaction skills. It also needs solid competences in science, technology, engineering and mathematics (STEM), and in arts and social sciences. Ethical thinking and an entrepreneurial approach are also a central part of skills and competences of the AI era.

1.7 Inclusiveness requires that everyone has access to digital and AI technologies and to the necessary skills, irrespective of gender, age or socio-economic background. The role of public education is essential here. Non-formal education also plays a significant role in enhancing

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[1] OJ C 190, 5.6.2019, p. 24.

[2] European Pillar of Social Rights principle 1. Education, training and life-long learning: Everyone has the right to quality and inclusive education, training and life-long learning in order to maintain and acquire skills that enable them to participate fully in society and manage successfully transitions in the labour market.

inclusiveness and active citizenship. Special attention should be paid to ensuring the skills of women and girls, as well as elderly people.

1.8   Competitiveness requires both top-level talent and a broad base of educated and skilled people. Professional qualifications must be adjusted constantly to match new developments and the competences needed. The EESC believes that new world-class talent can be best promoted through research projects. Cooperation projects with industry are one way of keeping talent in the EU and attracting foreign talent.

1.9   The EESC stresses that close cooperation is vital between policymakers, education providers, social partners and other civil society organisations with respect to digitalisation and AI and the related education and skills development. As the social partners play a specific role defined by the Treaty regarding labour-related issues, they should be involved, in accordance with relevant national rules, in decisions concerning investments, technologies and the organisation of work.

2.   **Introduction**

2.1   The rapid progress in digitalisation and AI challenges the EU to be well equipped to succeed in global competition. The improvement of skills and competences plays a key role here and requires the active development of education and training, which should also help people meet evolving demand and shape progress, by following its different forms and implications.

2.2   This exploratory opinion is a response to the Finnish EU Presidency's request concerning "how to strengthen the EU in the global race of future skills and education, while ensuring social inclusion" in the context of digitalisation and AI. To illustrate a future-oriented approach, the concept of the "AI era" is used here.

2.3   The EESC has previously provided several opinions that deal with the implications of digitalisation and AI for future work, skills demand and investment needs, as well as the ethical aspects of AI[3]. This opinion concentrates on the interlinkage of digital and AI-related skills, competitiveness and inclusiveness (not considering other future skills that will be needed e.g. to respond to climate change).

2.4   Digitalisation and AI are linked in several ways with education and skills development. They generate new demand for skills and competences, and also enable new ways of learning and teaching. Digital and AI techniques can also be used to anticipate changes in work and everyday life and thus in education and training needs. Moreover, education and training enable people to shape digital development.

2.5   Digitalisation and AI are also linked with inclusiveness in a number of ways. For example, they help people with disabilities to work and better manage their lives. They can also help reduce people's isolation. On the other hand, inclusiveness requires that everyone has access to these

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3   OJ C 240, 16.7.2019, p. 51, OJ C 228, 5.7.2019, p. 16, OJ C 62, 15.2.2019, p. 292, OJ C 440, 6.12.2018, p.1, OJ C 110, 22.3.2019, p. 41, OJ C 367, 10.10.2018, p. 15, OJ C 434, 15.12.2017, p. 36–42, OJ C 288, 31.8.2017, p. 43.

technologies and the necessary skills, irrespective of gender, age or socio-economic background.

2.6 Education in general is a competence of the Member States. There are, however, different kinds of cooperation such as the exchange of good practices. Work is also being carried out towards a European Education Area, built on the Erasmus+ programme and other EU funding instruments. Recognition of professional qualifications is another key form of cooperation.

2.7 To respond to the question on digital and AI related skills and education from the points of view of both success in global competition and social inclusiveness, the EESC considers the following three questions:

- What kind of skills and competences are most valid in the AI era?
- How would these skills and competences be best acquired and enhanced?
- What kind of policies are needed at national and EU levels to promote this progress?

3. **What kind of skills and competences are most valid in the AI era?**

3.1 Given that digitalisation and particularly AI have considerable implications for people's everyday lives, and for the development of businesses, jobs and the work of the future, development and progress are needed at several cognitive levels. On one hand, it is about awareness, knowledge and understanding, and on the other hand about competences and skills. High-level competences and talents are necessary for success in global competition, but success also requires a comprehensive base of educated and skilled people.

3.2 It is obvious that people are not largely aware of the opportunities that digitalisation, AI and robotics provide to assist them, while concerns related to jobs, safety and privacy are clearly in evidence. That is why there is a need for greater awareness of the opportunities presented by digitalisation and AI for society at large.

3.3 More knowledge of the nature and functioning of AI is also necessary for people's understanding and own critical thinking regarding where and how AI can be used. The need for greater understanding applies to employers and enterprises, employees, consumers and policymakers alike.

3.4 Moreover, the AI era calls for a capacity for ethical thinking in order to guide the development and use of digital solutions and AI in line with human rights. Besides human considerations, one should understand the environmental and climate aspects related to digitalisation and AI – both the opportunities these technologies provide and the risks they entail. These ethical and other considerations must be realised through participatory governance, which means involving civil society and the social partners in the different fields and processes.

3.5 The urgent short-term needs for developing competences and skills are related to narrowing the skills gap and correcting the skills mismatch in the labour market.

3.6   As it is ever more difficult to prepare for certain professions in the long-term, professional qualifications have to be adjusted constantly to match new developments and be based on a set of skills and competencies that are needed irrespective of exact developments.

3.7   It is relevant to ask which skills bring added value over machines and robots and which skills we want to keep anyway. This highlights the need for a strong foundation in cross-cutting skills such as logical reasoning, critical thinking, creativity and interpersonal and interaction skills.

3.8   It is also necessary in both the short and long term that the whole of society possesses at least basic digital skills. In addition to digital and AI literacy, general skills should include the ability to apply AI in creating and implementing innovative solutions in everyday life and work. This holds for people of all ages and all backgrounds, as well as people with disabilities, given the opportunities AI provides for them.

3.9   The AI era emphasises the role of science, technology, engineering and mathematics (STEM), but also that of arts and social sciences. It also stresses the need for multidisciplinary and interdisciplinary competences to understand systemic phenomena and multidimensional problems that digitalisation and AI can be used to solve.

3.10   The change in work also emphasises the importance of entrepreneurial skills. They are needed not only by actual entrepreneurs but by everyone, to be able to manage one's own work and life. These rapid changes also require adaptability and resilience at work and in society at large. Companies must seek ways to guarantee training for workers to facilitate such transitions in the world of work.

3.11   Diverse cooperation, communication and teaching skills are also needed in the AI era: Cooperation and communication between humans and intelligent systems, such as AI and robotics, become more general both at work and in everyday life. Moreover, AI and robotics are increasingly being taught, instead of programming only.

3.12   In addition to increased knowledge, competences and skills across the whole of society, high-level talent is needed to enable the EU to succeed in global competition and be at the forefront of innovation and investment in digitalisation and AI. Besides AI developers, more talented individuals and professionals are needed to apply AI in specific sectors, from manufacturing to services. All this requires advanced scientific, mathematical and technical competences.

3.13   Solid business skills are also a necessity to make use of the business opportunities provided by digitalisation and AI, for example in scaling up businesses. Given that trustworthy AI could be a competitive edge for the EU, ethics should be an essential part of the competences of all AI developers and users.

3.14   To succeed in the skills race, it is important to make full use of the whole potential of society. Special attention should be paid to women's and girls' digital skills and interest in STEM in order to get them more involved in the progress of digitalisation and AI. This would improve conditions in several sectors and in the economy and society as a whole, and help overcome gender bias related to data and technology.

4.   **How would the skills and competences of the AI era be best acquired and enhanced?**

4.1   It is obvious that enhancing the skills and competencies of the AI era requires reforms in current education and training systems, together with the necessary funding to accompany this. On the other hand, digitalisation and AI imply such huge changes that the whole idea of learning and teaching must be thought of in a new way. It is therefore crucial to prepare teachers and all educators for the new thinking and culture.

4.2   Continuous learning must be a right for everyone, in order to cope with current and future developments in economy and society and to be able to shape progress; it should follow the principles of "equal opportunities" and "leaving no one behind". Continuous learning is about learning for work, but also contributes to personal and professional fulfilment, social inclusion and active citizenship.

4.3   Primary education should provide pupils with basic digital skills, but above all must lay the basis for continuous learning. It should thus equip everyone with the competences and skills of learning-to-learn and of developing deeper skills for the AI era, including an understanding of social and ethical aspects and of how to keep "humans in command".

4.4   Instead of considering learning as a "pipeline" of different educational efforts, one should aim towards "learning design" for individuals. Learning design for the AI era calls for proper methods for assessing individual learning needs and an adapted supply of learning opportunities, while safeguarding the specific role of public education. In addition, it requires new kinds of activity by people to set objectives for themselves.

4.5   AI itself provides opportunities for more learner-centred learning. AI-assisted learning design can analyse the demand for skills and competences, enable self-assessment, help create individual learning paths and combine formal, non-formal and informal learning choices. AI can also be used to provide content for learner-centred education and training.

4.6   To enable more personalised learning paths and enhance opportunities for interdisciplinary and cross-institutional studies, education institutions should provide modular learning elements that can be combined flexibly.

4.7   In addition to basic education and vocational training, there is a clear need for upskilling and reskilling. This kind of learning increasingly takes place in the context of work. Cooperation between education institutions and social partners, by creating networks that cover both large companies and SMEs, is vital to enhance the training that is needed in workplaces.

4.8   As the number of people taking part in continuous learning is increasing all the time, easily scalable methods are needed. Massive Open Online Courses (MOOCs) provide one promising opportunity here. They can be used for example to increase general knowledge on AI (such as the Elements of AI course created in Finland) or to improve skills and competences in the application of AI and the use of e.g. virtual or augmented reality.

4.9 Non-formal education is key to furthering inclusive education systems and a key avenue for lifelong and lifewide learning. More emphasis should therefore be placed on assessing and validating the outcomes of non-formal education and informal learning as comparably as possible and supporting all stakeholders in this respect, as proposed by the EESC in its earlier opinion[4].

4.10 Youth organisations have an important role to play in empowering young people as workers and citizens. They provide education that caters to individual needs and are thus able both to reach out to young people that formal education providers do not reach and to complement formal education by providing a different set of skills and competences.

4.11 There is a positive match between the soft skills required by employers and those developed through youth organisations. Non-formal education also plays a significant role in reskilling and upskilling, and in the development of digital skills among older people.

4.12 Success in the global race for talent will require cooperation in both research and education. Research projects are an efficient form of higher education and a good way of promoting new world-class talent. Networks of connected research excellence centres and innovation hubs are important means of sharing competences. Where research projects rely on cooperation between universities and industries, talent often moves to work for enterprises. High-level research projects may thus also help keep talent in the EU and attract foreign talent.

5. **What kind of policies are needed to enhance the skills and competences of the AI era?**

5.1 The EESC believes that investment in education and training must be a central part of strategies on digitalisation and AI, and that digitalisation and AI should be an essential dimension of future-oriented education policy and systems. The EU should strive to be a global frontrunner here.

5.2 Digitalisation and AI have raised the importance of continuous learning to a new level, which is one of the central ways of strengthening the EU in the global race of skills and education and of doing so inclusively. The EESC suggests developing an EU strategy outlining the arrangements needed to enhance continuous, learner-centred learning, with digitalisation and the deployment of trustworthy AI at the heart of the strategy, and taking into account the differences in national systems. The ambition of the EU Education Area should be raised accordingly: it is not enough that one quarter of people be engaged in continuous learning; this must be a right for everyone.

5.3 The EESC calls for close cooperation between Member States in education and training. Full use must be made of common education and training programmes, including AI master's and doctoral degree programmes. The EESC sees the European universities' network initiative as a good way of enhancing high-level AI-related competences. International cooperation with leading research and education organisations on trustworthy AI is also needed, and cooperation in the field of vocational training needs to be encouraged. Moreover, recognition of

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[4] OJ C 13, 15.1.2016, p. 49.

qualifications should be further promoted to enable flexible mobility of workers between Member States.

5.4   The EESC calls for increased allocation of EU funds to initiatives in AI-related education and training. The possibilities provided by the Erasmus+ programme and other funding instruments should be explored further to strengthen cross-border exchange and cooperation. Increased funding of research programmes, such as the initiative for a European network of AI excellence centres funded through Horizon 2020, is also essential in generating and attracting high-level talent.

5.5   The European Social Fund and the Globalisation Adjustment Fund should also be used to support the inclusive development of digital and AI skills, including a well-communicated programme to support workers in acquiring new skills to cope with the digital transition.

5.6   Data and digital infrastructure play a key role in enabling the use of digital tools and AI in education and learning. The availability, quality, reliability, accessibility, interoperability and free flow of data are therefore vital for education and learning in the AI era. This needs to be considered in data policy, together with data protection and privacy aspects. Investment in digital infrastructure in all areas is also vital in order to enhance digital opportunities for education and learning and to avoid digital divide.

5.7   Investment in AI-related innovation is another field closely connected to education. More resources must be allocated to innovation by both public and private sectors. The EU must also pay due attention to an industrial strategy, ensure a favourable environment for European industries and promote mission-oriented innovation and investment to respond to the main economic, social and environmental challenges.

5.8   All in all, the EU needs a comprehensive approach to education and training policies, considering its strategic role and two-way linkages with other policies, including economic and social policy. The necessary public and private investment must support this and should be facilitated through reforms to create a favourable environment for private sector investment, an adequate EU budget and a commitment to a "golden rule" allowing funding from Member State budgets for a socially and economically productive investment that does not threaten future budget sustainability[5]. Correspondingly, education and skills should have a significant role in the European Semester. The first-ever joint meeting of the EU education and finance ministers during the Finnish EU Presidency should be an appropriate booster for this.

5.9   Finally, the Committee stresses the importance of closely involving civil society in the development of education and training policy and related policies, and in designing and implementing new education and training programmes, including ethical aspects. Cooperation is needed between governments, education institutions, social partners, consumer organisations and the other civil society organisations concerned.

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[5]   OJ C 190, 5.6.2019, p. 24.

5.10 The social partners have a specific role as defined by the Treaty. As they have a particular function regarding labour-related issues, they should be involved, in accordance with relevant national rules, in decisions concerning investments, technologies and the organisation of work. The EESC notes that digitalisation is one of the six priorities addressed in the European social dialogue work programme 2019-2021.

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Luca JAHIER
The president of the European Economic and Social Committee

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