Opinion of the European Economic and Social Committee on the 'Provision and development of skills, including digital skills, in the context of new forms of work: new policies and changing roles and responsibilities'

**(exploratory opinion requested by the Estonian Presidency)**

(2017/C 434/06)

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## 1. Conclusions and recommendations

1.1    Digitalisation will change our working life dramatically. We have to **act now** to ensure that the appropriate skills are available for the future, so that Europe remains competitive and is able to create new businesses and new jobs, people can remain integrated into the labour market throughout their entire working lives, and well-being for all is assured. The speed at which digitalisation and automation happens also involves social risks which we have to deal with through the coordinated efforts of all stakeholders: decision makers, the social partners and civil society.

1.2    Due to the availability of very high-capacity broadband networks, the future of work will see a growing number of atypical work forms, such as (multiple) part-time work, work with multiple contractors and so-called '**crowdworking**' with workers offering their skills on internet platforms as a network of highly qualified and specialised professionals. The EESC emphasises that in view of this growth of atypical work, the provision of **social security** and the avoidance of **poverty** (also among the elderly) must be given high priority.

1.3    The EESC welcomes certain national initiatives from trade unions and civil society providing **guidance to crowdworkers**, which have in some cases already led to the development of a Code of Conduct for crowdworking platforms. The EESC would like to see this development taken up by the Commission and applied at European scale. Increasing information asymmetry between consumers and businesses will have to be dealt with by methods such as, for example, the ethical codes for liberal professions.

1.4    Work is also changing in traditional companies. In particular, knowledge-intensive work can take place in increasingly unconstrained conditions, which, on one hand, corresponds to a **desire for flexibility** expressed by many employees, but, on the other, can lead to increased intensification and burdens. An increasingly **multi-local working environment** requires new social competencies.

1.5    **Automation** and **robots** will have a significant impact on the future of work. They can replace monotonous, heavy or dangerous work and a new generation of so-called 'collaborative robots' can become physical partners for workers, and can be particularly helpful for people with physical disabilities. While present-day robots are mainly replacing blue-collar work, white-collar professions will also be affected when artificial intelligence is applied. Automation and robots have the potential to stabilise the economy in an ageing society.

1.6    A significant number of **jobs** will be affected by the introduction of more robots into the workplace. We can expect that, as in the past, more wealth in society will lead to growth and new jobs in specific areas such as culture, art, tourism, social work, education, communication, entertainment or health care. However, this development may manifest faster than in the past, which may lead to distortions for which social dialogue will be needed at an early stage.

1.7    **Lifelong learning**, particularly related to digital skills, will be a necessity for everyone, requiring more and more flexibility from individuals, companies and all education and training systems. Beyond formal education, much more time will have to be devoted to professional training and informal learning, which should be supported as much as possible by an EU-wide harmonised system of certificates and standards. In this connection, moreover, the EESC has already put forward considerations on European measures in the field of training leave.

1.8    Basic education should include more **interactive digital learning**. Digital skills, however, can go beyond programming to include becoming aware of what lies behind a 'mouse click': understanding the system, the interconnections, the social impact and privacy and security issues.

1.9    Future skills should match societal needs and the **demands of the labour market**. This can only be achieved through close cooperation between the social partners and public and private education systems. More volatile markets will give rise to challenges, as businesses and workers will have to adapt quickly enough. This, in particular, is a challenge for professional training systems.

1.10    Public and private organisations (schools, universities, chambers of commerce, trade unions, training centres) have to provide **professional training** in new technologies, especially for those who do not have the capacity to organise training themselves, like **SMEs**, the liberal professions and the self-employed.

1.11    Long-term developments, which may lead to new and unpredictable challenges where today's skills can quickly become obsolete, can best be dealt with by **general education**. The better the general education, the better the preparation for the unknown. A broad general education is also the best basis for learning how to single out reliable information on the internet and for becoming less vulnerable to fake news.

1.12    The EESC welcomes the various relevant initiatives of the Commission related to lifelong learning, digital skills and jobs, the new skills agenda and Erasmus+. The **good practice repository** set up by the Commission has the potential to serve as a facilitator for an EU-wide debate that should lead to the adoption of guidelines and standards based on best practices. Organised civil society can and will play an important role here.

2.    **Introduction**

2.1    Digital technology is playing an increasingly important role in our economy and social life. It will be key for the development of new economic models (collaborative, functional, circular, sharing). In addition, globalisation, migration, the ageing society, climate change and the need for sustainable solutions will have a major impact on the social environment in general, and on our working life in particular. The new forms of work which are currently in evolution are addressed in this exploratory opinion by focussing on the skills needed, including digital skills, and on new policies and changing roles and responsibilities, while a parallel exploratory EESC opinion deals with new forms of work and the role and opportunities of social partners and other civil society organisations ([1]).

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[1]    EESC opinion on *The role and opportunities of social partners and other civil society organisations in the context of new forms of work*, adopted in September 2017 (see page 30 of this Official Journal).

2.2　In order for Europe to remain competitive, to be able to create new businesses and new jobs and to provide well-being for all, the development of **appropriate skills** must be given priority. The speed with which digitalisation and automation happens also creates **fear** among the population, in particular among workers, and **uncertainties** in businesses given the great challenges involved. Our society must deal with these challenges and adapt to the changes as a matter of urgency, through coordinated efforts by all stakeholders in public policy and civil society. Europe can be a global leader, with a modern development based on its own values.

2.3　The EESC is convinced that the future of work should be a key priority within the debates on the **European Pillar of Social Rights** ([2]). Specific issues have already been addressed in EESC opinions on the Digital Single Market and SMEs ([3]); the New Skills Agenda ([4]); the European Gigabit Society ([5]); Enhancing digital literacy, e-skills and e-inclusion ([6]); Industry 4.0 and digital transformation ([7]); as well as in the EESC information report on the mid-term evaluation of the Erasmus+ programme ([8]).

## 3. **The future of work**

3.1　Very high-capacity broadband networks will open the door to the use of a large variety of **new applications and environments,** such as the 'Internet of Things', automation, cloud computing, the exploration of big data or new business models based on a service-dominant logic. This trend will be advantageous in that it can bring types of professional specialisation that are currently the exclusive preserve of major conurbations to areas that are remote and/or difficult to access due to their terrain. Tools such as remote medical consultation, monitoring and reporting mean that it will be possible to monitor vulnerable people directly in their homes. It will even be possible for small centres to have access to highly specialised professionals. It is important to recognise that the way of working will be changed for almost all groups and professions and that predictions about developments over the next decades comprise significant uncertainties. We have to realise that we need to be prepared for the unknown.

3.2　In the future, there will be growing differentiation in the **organisation of companies**. On the one hand, we have the traditional companies with permanent staff and which have to offer an attractive working environment, the so-called 'caring companies' ([9]). On the other hand, we have a growing number of companies with a 'fluid' organisation, which are also increasingly based on so-called 'crowdworkers'. This allows them to react very flexibly to changes in the markets. Crowdworkers are a network of highly qualified and specialised professionals, although to some extent there may also be less qualified collaborators who offer their skills on Internet platforms. A variety of mixed forms of company organisations is also expected to develop. For example, caring companies can outsource a part of their business to crowdworkers. Increasing information asymmetry between consumers and businesses will have to be dealt with by methods such as, for example, the ethical codes for liberal professions.

3.3　**Crowdworkers** enjoy their freedom with flexible working hours and work location. They offer their skills on the market — sometimes for micro tasks — for the best price. The lack of social security in this kind of self-employment ('digital nomads'), however, entails considerable risks. The tendency in our society to shift from 'normal' employment to 'atypical' work — which, apart from crowdworking, includes (multiple) part-time work and work with multiple contractors — is a serious challenge for our **social security systems** ([10]). The four components of flexicurity ([11]) have to be implemented for this new type of work as well: 1) flexible and reliable contractual arrangements, 2) comprehensive life-long learning, 3) active labour market policies, and 4) modern social security systems.

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([2])　OJ C 125, 21.4.2017, p. 10.
([3])　EESC own-initiative opinion on the *Digital Single Market — Trends and opportunities for SMEs,* to be adopted in October 2017.
([4])　OJ C 173, 31.5.2017, p. 45.
([5])　OJ C 125, 21.4.2017, p. 51.
([6])　OJ C 318, 29.10.2011, p. 9.
([7])　OJ C 389, 21.10.2016, p. 50.
([8])　Erasmus+ mid-term evaluation; adopted on 31 May 2017, (Information Report).
([9])　Bauer, Wilhelm et al. (2012). *Arbeitswelten 4.0. Wie wir morgen arbeiten und leben / Working Environments 4.0. How We Will Work and Live Tomorrow.* Dieter Spath, ed. Stuttgart, Fraunhofer Verlag.
([10])　OJ C 303, 19.8.2016, p. 54; OJ C 13, 15.1.2016, p. 161.
([11])　See communication *An Agenda for new skills and jobs: A European contribution towards full employment,* COM(2010) 682 final.

3.4 Work is also changing in traditional companies with permanent staff. It is now relatively unimportant where knowledge-intensive tasks and work — such as engineering tasks or research and development projects — are conducted. This type of work can take place in increasingly unconstrained conditions, which, on one hand, corresponds to a **desire for flexibility** expressed by many employees, but, on the other, can lead to increased intensification and burdens. Attaining the desired work-life balance has become one of the essential criteria for choosing an employer. Our society is heading towards a multi-local working environment which requires **new social competencies** for all those working in it. 24/7 connectivity may help combine private life and work, but it can also be a burden and lead to health risks.

3.5 **Automation and robots** have a significant impact on the future of work. The benefits are obvious: higher productivity and reliability, and replacement of monotonous, heavy or dangerous work. A new generation of so-called 'collaborative robots' can become physical partners for workers and, in particular, be helpful for people with physical disabilities. Artificial intelligence will allow the automation of complex work, which will affect not only blue-collar work, but white-collar professions as well (insurance sector, financing services, translators, legal advice, etc.) ([12]). Automation and robots have the potential to stabilise the economy in an ageing society.

3.6 Robots initially replace human workers but new jobs may be created subsequently. It is often discussed in the public forum how many **jobs** are **affected** and how many new jobs may be **created** at the same time. The trend is clear, but the numbers vary largely. For example, the World Economic Forum predicted that more than 5,1 million jobs would be lost in 15 major developed and emerging economies due to disruptive labour market changes between 2015-2020, as artificial intelligence, robotics, nanotechnology and other socio-economic factors replace the need for human workers, while on the other hand those same technological advances would also create 2 million new jobs ([13]). There is no doubt that with robots productivity will increase, which is good for the economy and for our society, since this leads to a higher GDP. It is almost impossible to predict how the GDP surplus will be used for the creation of new jobs ([14]). We can learn from the past, when automation led to more wealth in society with growth and new jobs in specific areas such as culture, art, tourism, social work, education, communication, entertainment or health care. We can expect that this trend will continue, although it may be faster than in the past. This may lead to distortions for which **social dialogue** may be needed at an early stage.

3.7 In addition, the digitalisation and robotisation of **transport** will bring about profound changes in the nature of work and the demand for skills. The EESC highlights the importance of dealing with these structural changes by enhancing a fair and smooth transition and addressing the skills gap ([15]).

4. **Provision of skills and competencies**

4.1 Competencies are a necessary prerequisite for transforming knowledge into results that increase our well-being — yet the digital age brings new challenges. We expect growing numbers of workers with atypical employment contracts who frequently lack access to traditional, company-based training schemes. **Technical and social competencies**, which comprise the ability to communicate and interact with people in different contexts and through different technical tools, as well as **entrepreneurial competencies** and a focus on responsibility towards society, are already a prerequisite, but the majority of education systems are still unable to deliver them as they were designed for a different era. The Committee once again calls upon the Member States, in cooperation with the EU institutions and agencies, as well as companies in Europe, to increase their capacity and introduce more innovative solutions in the fields of **education and skills development**, including workplace training and re-training, as Europe needs a genuine paradigm shift in the goals and functioning of the education sector, and an understanding of its place and role in society ([16]).

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([12]) See EESC opinion on *The consequences of Artificial Intelligence on the (digital) single market, production, consumption, employment and society*, adopted in 31 May 2017 (OJ C 288, 31.8.2017, p. 1).
([13]) World Economic Forum. *Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution: The Future of Jobs*. Global Challenge Insight Report, January 2016, p. 13.
([14]) OJ C 181, 21.6.2012, p. 14.
([15]) See EESC opinion on the *Implications of the digitalisation and robotisation of transport for EU policy-making*, adopted in July 2017 (OJ C 345, 13.10.2017, p. 52).
([16]) OJ C 173, 31.5.2017, p. 45.

4.2　**Digitalisation** creates potential for accessible and personalised technologies that can offer more learner-centred learning paths and create a **learning continuum** between formal, non-formal and informal learning. Digital solutions can be integrated into lifelong learning strategies and can be a powerful tool for narrowing the achievement and opportunity gaps. However, this is heavily dependent on how digital technology is introduced and used in learning environments.

4.3　To achieve enhanced learning experiences and outcomes of learning, the education system needs to place the learner at its centre: he/she is the one who should regulate his/her learning, training and upskilling. This would equip learners to become active, digital citizens, able to capitalise on the knowledge they acquired by controlling the nature, place, pace and timing of their learning in accordance with their views and values, and with values such as solidarity and respect for difference that are part of the European identity. Thus, future investment in technologies has to be closely accompanied by investment in people and by greater access to lifelong learning opportunities.

4.4　Future skills should also match societal needs and the **demands of the labour market**. This can only be achieved through close cooperation between public and private education institutions and all other relevant interest groups, including the social partners and companies. More volatile markets will give rise to challenges, as businesses and workers will have to adapt quickly enough. In 2010 ([17]), the EESC expressed its support for the establishment of **sector councils** (ESC) on employment and skills at European level. Until today ESCs have been set up only in two sectors, while ESC projects in 14 other sectors are still in their infancy. The EESC would like to ask the European Commission to explain why this development is so slow and doesn't get the necessary support from sectors and national institutions.

4.5　Learners need to be guided towards **innovative practices** of knowledge creation, which implies the merging of social, physical, digital, virtual and mobile spaces for learning, and to learn how to learn. Inquiry and project-based learning, phenomenon-based learning, student-activating activities, collaborative learning and flipped learning, for example, all lead to more reflective and participatory learning processes. One possible way to narrow or eliminate gaps between innovation in technology and pedagogy is to link formal, non-formal and informal learning structures more effectively.

4.6　**Lifelong learning** is a necessity for society and all relevant players. It starts with a robust general education — a key part of individual development, which helps to prepare a person for new and unpredictable challenges — and continues for a much longer time with professional training and informal learning, which should be supported by a harmonised system of **EU-wide certificates and standards** and also by appropriate common tools to determine comparability and equivalence of learning outcomes. The requirements for learning will become more important, with growing demands on the flexibility of individuals, companies and all education and training systems, thus the interdisciplinary approach will play an increasingly important role.

4.7　The EESC reiterates its proposal ([18]) to prove whether European measures are needed to ensure that Member States' positive experiences with training leave are disseminated across the EU.

4.8　The current systems are in general not adapted to the structure of digital labour markets, in which non-standard employment will be more prominent. The current systems reach standard employees through workplace-based training, if at all. Systems have to be updated in order to enable everybody in the labour market to have access to training. The EU will have to mobilise considerably more funding for investment in training, otherwise adequate training will become the privilege of the few. This is an issue, as only those with up-to-date skills stand a good chance of finding decent and fairly remunerated jobs.

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([17])　OJ C 347, 18.12.2010, p. 1.
([18])　OJ C 13, 15.1.2016, p. 161.

4.9　　**Digital skills** should be introduced from the earliest schooldays ([19]) and basic education should include more interactive digital learning ([20]). Digital skills, however, can go beyond programming to include becoming aware of what lies behind a 'mouse click': understanding the system, the interconnections, the social impact, and privacy and security issues.

4.10　　**Digital tools** play an important role in transforming and supporting teaching, which can result in the increased engagement of learners and improved results ([21]). As **educators and teachers** will have an increasingly important role to play, their competencies will have to adapt to new approaches, technologies and knowledge in the new education environment. Qualitative preparation of educators will, therefore, become key, as well as their status in terms of professional flexibility, remuneration, social guarantees, etc. In order to ensure the qualitative change across European education systems, the EESC recommends following the successful current examples within the EU ([22]) and calls for more investment in the initial and continuous **professional development of teachers** and other educators.

4.11　　In addition to assisting the formal education actors in their efforts to become lifelong education providers, additional support needs to be given to **non-formal education providers**. They can reach out to disadvantaged and vulnerable groups, and provide them with access to lifelong learning opportunities, including the possibility of validating learning acquired via digital, online and open learning resources and tools, and via various assessment and self-assessment, formative and summative methods.

4.12　　Apart from the potential to improve teaching and learning processes, digital technologies can also foster **new assessment methods**, including self-assessment, that can supplement traditional summative approaches; namely methods that make assessment an integral part of learning through artificial intelligence, machine intelligence, learning analytics and new ways of linking the assessment to learning materials. Use of analytical technologies enables rapid feedback loops which allow real-time assessment, and thus contribute to more personalised learning.

4.13　　In the domain of science and research at university level, the digitalisation of every research field makes it necessary to deal with huge amounts of scientific data. A suitable data infrastructure (at national and international level) will make it possible to access and analyse these data remotely as well. While Europe is planning to provide the infrastructure needed to accelerate science and innovation, an estimated half a million **data experts** will be needed in Europe by 2025 ([23]). Europe has to make a concerted effort to develop such core data expertise. National high-end education does play an important role in this respect and must be complemented by European schemes such as Erasmus+ and Marie Skłodowska-Curie actions.

5. **The role of public policy and civil society**

5.1　　Europe has many good examples to offer regarding how to deal with the requirements for new skills in the digital age. The EESC welcomes the various initiatives from the Commission related to lifelong learning, digital skills and jobs, the new skills agenda and Erasmus+. The **good practice repository** set up by the Commission has the potential to serve as a facilitator for an EU-wide debate to identify guidelines and standards based on best practice. Organised civil society can and will play an important role in this context.

5.2　　The EESC would like to emphasise the highly respected work accomplished by the EU agencies, such as **Eurofound** and **Cedefop**. Better interagency cooperation could lead to higher impact and would attract more attention from our Member States and the EU institutions.

5.3　　A **system to provide skills and competencies** for future work has to be developed now. Where possible, it should be based on skills assessment and anticipation exercises identifying long-term skills needs at all levels, while at the European level the establishment of sector councils on employment and skills should be strengthened, in order to avoid skills shortages and mismatches. This is an urgent task for all stakeholders, including the public and private institutions involved.

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[19]　　OJ C 451, 16.12.2014, p. 25.
[20]　　For instance, in Japan, game development is part of the curriculum from the age of 5; in Estonia, basic and visual programming is taught from the second grade onwards. Such examples may serve as pioneering models.
[21]　　Institute for Prospective Technological Studies, Policy brief on ICT for Learning, Innovation and Creativity, 2008.
[22]　　Such as the Finnish education system in general, the Ørestad Gymnasium in Copenhagen (Denmark), the Egalia Pre-School in Stockholm (Sweden), etc.
[23]　　Commission High Level Expert Group on the European Open Science Cloud, *Realising the European Open Science Cloud*, 2016, p. 12.

5.4    Clear **roles for the various formal education levels**, as well as links between them, should be set; for example: fostering creativity and imagination — at preschool level; combining creativity with solid basic knowledge, and fostering critical thinking and adaptation of knowledge — at school level; adding specialised interdisciplinary skills — at VET level; and expanding professional interdisciplinary knowledge and thinking — at higher education level.

5.5    **Professional education and training provided by companies** for their employees is key. Here, cooperation between companies, universities and professional institutions will be crucial. There will be an increasing number of organisations that will provide **non-formal education**, i.e. organised educational activities outside the established formal system. Civil society could create new educational fora for competence development, in cooperation with various individuals, institutions and interests.

5.6    **SMEs** need special support from outside because as a rule they have limited resources for training, particularly when new technologies emerge and the specific knowhow is not yet available in-house. Institutions such as **chambers of commerce** or the organisations of liberal professions in connection with schools, universities and private training centres, as well as institutions based on a public-private partnership, could be helpful in providing education programmes.

5.7    **Informal learning** will play an increasingly important role as a truly lifelong process whereby every individual acquires skills and knowledge from daily experience; this sector could be improved qualitatively thanks to publicly funded programmes offered through TV channels, internet platforms or other media. **Standards and certificates** would be helpful in making these learning achievements measurable and comparable, particularly in the event of a job change.

5.8    With regard to all the different forms of education, existing tools for determining the **comparability and equivalence** of informal learning need to be improved. Existing recognition systems for prior education, learning outcomes and competencies have to be overhauled in order to become a reliable and accessible standard for all, as well as to be able to help learners become aware of their own experiences, competencies and knowledge.

5.9    **Social security** and collective bargaining is an issue, particularly for crowdworkers and those in atypical employment. A growing number of such 'digital nomads' are threatened by poverty when getting old. Public policy has to develop regulations to deal with this problem. Some social dialogue initiatives dealing with these issues already exist. One good example is the trade union IG Metall in Germany, which has set up the faircrowdwork.org internet platform providing **guidance for crowdworkers** which, together with other stakeholders, has developed a Code of Conduct for crowdworker platforms. The EESC would like to see identified best practice rolled out across Europe.

Brussels, 20 September 2017.

*The President*
*of the European Economic and Social Committee*
Georges DASSIS