Work under Transformation

Digital Transformation in Learning for Active Citizenship

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Preface:

Into Digital Transformation

The social, economic, cultural and political impact
of digital change in education and learning

Digitalisation is an essential part of our lives across all dimensions. Many people think that it is a technological process, i.e. it is mainly about computer servers, algorithms, Internet and the like. But that is only half of the truth. For example, it is difficult to separate digitalisation from almost all activities in our lives. When we shop online – are we online or are we shopping? When we play computer games – are we playing or are we at the computer? And when we are active in social media, we are both social and active in an electronic medium. Moreover, our health system is already digitised, the pollution of the planet is, to a growing extent, caused by digital technology, and activities such as navigating a car or collaboration in civil society are increasingly facilitated by digital technology.

   This example seeks to point out that what we ultimately understand by "digitalisation" depends very much on how we look at the topic. It is after all possible to engage in all the aforementioned activities without information and communication technology (ICT). In this sense, we prefer the term *digital transformation*, because it explains a social, cultural or economic process in which things are done seemingly differently – made possible by information and communication technology. In this sense, education for digital transformation is learning about social, economic and cultural processes and about understanding the differences caused by technology. As such, in further exploring the topic, it is important to:

1. Look at both the technology and the nature of economic, social and cultural activities, for example, what we do in different social roles as digital customers, digital activists, digital workers and digital citizens.

2. Take an interest in the difference that digitalisation brings to such activities. What is changing thanks to new technology? What impact does it have on society?

There is No Overly Complex Issue for Education

A lot of curiosity and increasing concerns regarding digitalisation today have to do with its 'engine room' - the fascinating global infrastructure of the Internet, its enormous costs and hunger for energy, Big Data, AI, and the increasing economic value of digital platforms.

 In particular, the growth of new kinds of platforms, fuelled by digital business models successfully capitalizing on users, is a widely visible phenomenon of this new technological and economic configuration. Consequently, their users are at the same time subjects and objects of digital change. They experience the opportunities made available through new, platform-mediated forms of interaction, but also feel uncomfortable since they are also symmetrically affected in their role as autonomous subjects. The right to independent information, privacy and security are, from this perspective, not yet sufficiently respected in the digital sphere.

 The migration of substantial parts of working and communication processes to the digital sphere during the last decades is also simultaneously a benefit and a challenge. One aspect is technical mastery – access to current technology and the ability to use it in a competent way. A more fundamental aspect is that the "digital self" is completing people's analogue identity. Their digital traces are accompanying people's lives with related consequences for their various social roles as private subjects, employees and citizens.

 Feeling overtaxed by all the associated challenges and concerns is a bad prerequisite for learning and a bad basis for considering future personal and social decisions. It is high time for adult education and youth work to do something about this double-edged sword.

 In particular, adult citizenship education has a lot of experience teaching complex social issues and could transfer its methodology and approach to the topic of digital transformation. We know, for example, that nobody needs to be an economist to be able to co-decide on political decisions affecting the economy. We also are capable of understanding the social impact of

cars, despite very limited knowledge of automotive engineering. Considering that it is possible to acquire knowledge about digital transformation, could we not even enjoy learning about Big Data, robotics, algorithms or the Internet of tomorrow similar to the way we passionately discuss political issues such as transport, ecology, or democracy? We should not, however, be blinded by the technical complexity of the digital transformation. It is important that we pay more attention to the social dimension, the intentions behind a technology, exploring its effects and regulations.

Although not familiar with all technical or legal details, most people intuit that it is ill-advised to give out personal information without consent. We suppose what the right to privacy should entail and what distinguishes conscious decisions from uninformed ones, and in our analogue world, we discourage the "used car salesmen" of our society from taking unsuspecting customers for a ride. After all, most of us have experienced the discomfort of having been deceived as a result of not understanding the fine print.

If we transfer this insight to a pedagogy of digital transformation, we must admit that we should also be willing to explore new aspects of the technical dimension such as data processing or the nudging mechanisms in online platforms. But that is not the only priority! The most important thing is that we know what our *rights* and *ethical foundations* are and how they relate to the new digital contexts and are able to act accordingly. These questions are not solely related to privacy and safety, as seemingly no aspect of social life is unaffected by digital transformation.

Using this foundation, we might further explore the potentials and risks of digitalisation in context, assessing its impact. Personal rights, for instance, entail privacy issues, but digital transformation has also led to new opportunities for co-creating, better information, or involvement of citizens in decision-making processes. On this basis, we are then able to define the conditions and rules under which certain digital practices should be rolled-out or restricted.

E*lectronic* communication has changed the character of *human communication* as a whole. There are fewer impermanent ideas or assertions that go undocumented, to later be searched and rehashed. This change is both positive and negative, for example from the perspective of an employee who may be judged based on past decisions which live forever online. Pedagogy might help people to better understand the risks and benefits associated with electronic communication.

In addition, it will be a creative challenge to imagine the technology we want to develop as a society and what will help us to initiate social, economic and cultural

changes in the future. In this regard, it is also important to develop a view towards the so-called 'skill gaps' and 'digital gaps' people may face when mastering digitalisation. What is the purpose of defining a gap; for whom is the gap relevant; in whose interest is it to argue the risk of gaps as opposed to their benefits?

Why Democracy and Rights-based Learning Makes the Difference

The essence of a definition of democracy and rights-based education can be found in the Council of Europe's Declaration regarding Education for Democratic Citizenship (EDC), which is "education, training, awareness-raising, information, practices, and activities which aim, by equipping learners with knowledge, skills and understanding and developing their attitudes and behaviour, to empower them to exercise and defend their democratic rights and responsibilities in society, to value diversity and to play an active part in democratic life, with a view to the promotion and protection of democracy and the rule of law" (CoE CM/Rec(2010)7).

Transferred to the context of learning about digital transformation, we extract three core questions from this:

1. *What digital transformation competence* – knowledge, skills, values and attitudes – do citizens need to understand the digital transformation in their society and how it affects them in their different social roles?

2. How are *fundamental rights and ethical foundations* related to the transformation? Where do they shift their nature, what weakens them and what kind of development strengthens their enforcement?

3. What *active civic competences* do citizens need to contribute to the transformation, including participation in relevant public discourses and decisions, self-organisation and social engagement, and the development of social innovations?

Stakeholders from many different sectors have high expectations in education. In particular, they demand from earning for active citizenship a better preparation of Europeans for big societal changes. Only if we implement ideals of democracy "by design" into digital progress will we create a *democratic* digital society.

Enjoy and Explore

This reader series aims to introduce selected key aspects of digital transformation to educators and teachers in formal, non-formal or informal education. Our perspective is *Education for Democratic Citizenship* and our main goal is to motivate you as educators in adult education and in youthwork or other education fields to dive into the topics connected to digital transformation with curiosity and critical thinking as well as ideas for educational action. In other words: Nobody has to adore technology, but it is definitely worthwhile to become more comfortable with it. Digital transformation is a reality and as such, in principle, relevant for any specific field of education, any subject, or pedagogy.

Together we might work on a broader understanding of what digital literacy is and explore as educators and learners in lifelong learning processes how it affects our lives. With a strong aspect of democracy and human rights in lifelong learning, we should lay the foundations for a democratic digital transformation and empower learners to find a constructive and activea position in this transformation.

We aim to provide basic insights into some of the various aspects of digital transformation as a basis for further exploration. They tackle the digital-self, participation, the e-state, digital culture, media and journalism and the future of work and education. In each of the publications we also present our ideas as to how education might take up this specific topic.

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Work under Transformation

As part of a general trend in the platformisation of the European economy, automatisation, additive factoring and the (global) redefinition of value chains and collaboration processes are drivers of industrial transformation. Obviously, these developments also have an impact on concrete working conditions. People often get very close with new technology in their working spaces. Today most of them use information technology (IT), although the differences among countries and also sectors are remarkable. Working spaces have also become more technologically enhanced. One result of digitalisation and rationalisation is job polarisation, an increase of high-profile and low-profile jobs while those in the middle vanish. On the other hand, platforms are creating a new kind of working environment, from low skills to highly specialized work. In particular this chapter also highlights how education policies and training strategies might respond to these challenges. We explain the European approach of upskilling. The chapter ends with scenarios in regard to (un)employment and labour and with the idea of a universal basic income, which has received increasing support thanks to discussions about digital transformation.

Technology Adoption

When addressing the digital transformation across European countries, the level of digital transformation of the working space is different in Europe. A report of the Digital Economy and Society Index (DESI) explains: *"The Netherlands had the highest rate of ICT usage by workers in the EU, as 93 % of its internet users in employment declared that they used computers or computerised equipment at work (...) Conversely, the lowest ICT usage rates amongst the internet users in employment were observed in Romania (36 %) and Bulgaria (47 %)"* (EU DESI, 2019, p. 8). In looking deeper at the kind of technology people use during at work, emails and office software are the most common.

ICT Activities at Work

Exchange emails or enter data into databases	**61%**
Create or edit electronic documents	**47%**
Use specific software	**38%**
Use applications to receive tasks or instructions	**22%**
Use social media for work	**18%**
Develop or maintain IT systems or software	**9%**

ICT-related activities at work carried out at least once a week, 2018
(% of employed people having used the internet in previous 12 months)

In looking not at activities but technologies, a European survey in the construction and foods sectors discovered that social media technologies are the most adopted technologies in European businesses. Although the survey was addressed to these sectors it seems plausible to draw more general insights as well: Big data and data analytics, cloud technology and the Internet of Things are adopted by around 20%, while *"Artificial intelligence and 3D printing are the two technologies with the lowest adaptation level, measured at 5%"* (EU EASME, 2018, p. 32).

Source: Digital Transformation Scoreboard 2018 (EU EASME 2018, p. 19)

Social Media	Big Data/DataAnalytics	Cloud technologies	Internet of Things	Mobile services	Robotics & automated machinery	Cybersecurity solutions	3D Printing	Artificial intelligence
31%	24%	23%	20%	18%	16%	14%	5%	5%
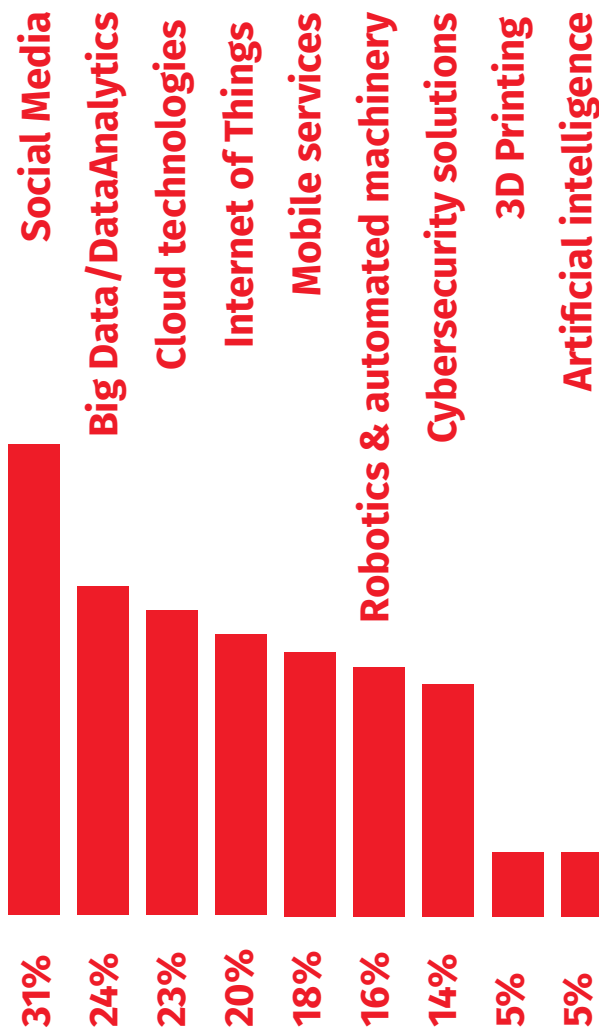
Level of technology adoption among all survey participants (construction and food sectors)

Automatisation

A widely visible impact of digital transformation is automatisation and industrial robotics. 422,271 robots were installed worldwide in 2018. 2.5 million robots in total are at work around the world in factory lines. Although two thirds of the new robots were installed in Asia, Europe and North America are also growing markets for robotics. Europe's growth rate was 12% on average in recent years. Some analysts conclude that this could trend to a partial come-back of industry after decades of its outsourcing to other parts of the world.

Automotive and electronic industry own most installations, but very dynamic growth is expected in other fields for the future. In particular, cheaper robotic installations and Artificial Intelligence (AI)-driven abilities of robots enabling collaboration (which is today a niche of 15%) would also robotize a lot of working spaces in small and medium sized businesses, where such installations are today still too expensive. In this context, service robots are also perceived as a very dynamic field of growth, for instance for medical services and transport (e.g. autonomous vehicles or drones). This is similar to the consumer field, where vacuum cleaners or lawn mowers were already entering the broader market.

Furthermore, other forms of automatisation become apparent. Robo-advisers are managing financial portfolios, chat robots are replacing traditional help desks/support lines, and according to media organizations, text robots are even a reality in European newsrooms. In the Human Resources (HR) field, a lot of application and matching processes are partially automated. Computed translation is replacing interpreters and enabling workers to deal with internationalization more easily (EU FORESIGHT).

Additive Manufacturing: printing 3D objects by adding layer-upon-layer of material, often in plastic, but also printers for metal and ceramic products are available.
Makerspace: A shared workshop for prototyping and small production for small entrepreneurs and freelancers, typically with opportunities for 3D printing, CRC milling machines or cutting plotters.

Additive Manufacturing and Making

The means of production are also changing. Additive Manufacturing (AM) is an example for transforming the ways in which products are designed, developed, manufactured and distributed. 3D printing allows faster and individualised prototyping and on-demand production (EU GROW-DTM, 2017).

Still, the production costs are quite high and production processes quite slow. AM technology is involved in prototyping and in specific niches (for instance printing specific small parts for the airplane industry) (EESC, 2015).

Other innovative technologies are, in this context, CNC milling machines or cutting plotters for different materials. They enable small entrepreneurs to produce precise and high-quality small series or prototypes, which were designed on the computer. Makerspaces or fablabs are providing the necessary infrastructure, often in the frame of a coworking space. They are supported as parts of a decentralised urban economic infrastructure, often in the context of creative industry.

Platformisation

Another important development is the platformisation of services. Digitalisation is enabling enterprises to reinvent themselves, changing corporate culture, spatially and functionally. In consequence, this changes how a company relates to other business partners and also to the individuals bound to it through employment or service contracts (IDG Research Services, 2018, p. 11). Platform-mediated collaboration is integrated in all parts of a value chain and is happening both in a local context and across national boundaries. In particular it has an impact on labour relations and the position of platform workers. Additionally, the platforms leave their role as intermediates behind and they themselves become an influential player, which is currently being discussed using the term *platform power*.

1.

Rationalization and Job Polarisation

The sword of Damocles hanging above many heads is the fear of job dropout and labour rationalization. Images of the past rationalisation waves have taught us the huge negative impacts connected with the closing of non-competitive industries. The decline of industries has devastated cities and brought huge social and ecological costs - the negative heritage of modernisation. When some companies were able to respond to the changes, the social price was a decrease of local jobs through international collaboration and the globalization of their value chains, but at least partially compensated through their taxes. Structural change of these regions is an enormous political task. Since 1968, Germany has invested millions of Euro in the transformation of the Ruhr region, for social insurance, subventions, ecological measures, revitalization of cities and creating new jobs in new economic clusters. While the economic vision thirty years ago was a transformation toward a stronger third sector and a society based on the provision of services, today the focus is set more specifically on ICT related jobs, start-ups and digital business models. While some argue that this is a logical extension of the older transformation model, more and more the perspective is gaining acceptance to speak from the emergence of a fourth sector in order to understand the macro-economic impact of digital transformation.

The brighter images are connected with new quality jobs, the development of new occupational profiles and the appearance of completely new branches. When rationalisation is a process mainly fueled by globalized cooperation and trade, the reorganization of work in line with the idea of functional differentiation, and a production and logistic chain aimed at reducing fixed costs, digitalisation and automatisation are key instruments for implementing this management vision. The effect of this management vision on the jobs is called employment polarisation. "Employment polarisation would occur if middle- skilled employment were hit particularly hard by job losses while the employment of low- and high-skilled individuals simultaneously increased" (BMAS, 2017, p. 53).

Job Polarisation in Europe 1995 - 2015

Development of the number of jobs according to skill requirements in different European regions.

	low skill	middle skill	high skill
Northern Europe	**+** **+**2.9	**– – – –** **–**10.9	**+ + +** **+**7.9
Western Europe:	**+** **+**2.7	**– – – –** **–**9.8	**+ + +** **+**7.6
Southern Europe:	**+ +** **+**4.6	**– – – – –** **–**11.9	**+ + +** **+**6.9
Central Europe:	**–** **–**2.5	**–** **–**3.7	**+ +** **+**6.3
OECD ∅	**+** **+**2.3	**– – –** **–**7.1	**+ +** **+**5.3

Source: OECD (2017) The labour market continues to polarise – Heterogeneity in polarisation

Job Polarisation:
the decrease of middle-skilled jobs resulting from a higher demand for high-skilled and low-skilled jobs. Accompanies a growing digital divide and social inequality.

The question is to what extent job polarisation is instigated by digital transformation. Although current studies conclude that there is no direct evidence that digitalisation is the main driver of polarisation, accelerated digitalisation is fueling structural transformation across branches of the economy and therefore has a significant, although indirect, impact according to the German Institute for Vocational Education and Staab/Prediger (Staab&Prediger, 2019; Helmrich et al., 2016). EU experts see a more direct link: "The polarising trend (…) draws attention to the fact that a high share of workers are in occupations which do not require (or require to a very limited extent) digital skills. This dichotomy risks widening the digital divide, leaving a proportion of workers lagging behind and at risk of digital exclusion, who would hence benefit from specific attention" (Gualtieri et al., 2017, p. 100).

Also the OECD predicts, that 14% of jobs are at high risk of that 32% automation of jobs could be radically transformed. (Nedelkoska & Quintini, 2018).

14% of jobs at high risk of automation   **32%** could be radically transformed

In different countries there are varying perceptions in regard to the level of job polarisation and job loss. For instance, the responsible German ministry is optimistic that in accelerated digitalisation scenario, 750,000 working spaces in 27 branches would be lost, between 2014 and 2020. However, *"this would be more than offset by employment growth of a million jobs in total in 13 sectors (e.g. IT services, research and development)"* (BMAS, 2017, p. 48). As a result, 250,000 new jobs would be created. In the technology-friendly country of Estonia, *"most Estonians believe that new technologies and automation will soon lose many jobs, but at the same time they are sure that their own work will not be affected by IT development"* (Ituudised.ee, 2018/09/26).

2. The Crowd Working in the Cloud

A significant part of the population is already shifting from the regular labour market toward a intermediary role between self-employment, freelancing, part-time and stable contract employment. In particular, the widely visible impact of digital transformation in this development is the emergence of the gig economy and other platform-mediated work.

Flexibility

First, it is important to provide some information about part-time work. According to Eurostat, 19.1% of the employed Europeans (EU 28) were in part-time contracts in 2019. In some countries this seems to be an increasingly mainstreamed model, like in the Netherlands, where half of the working population has part-time contracts (75% of which are women and 28 % of men (Eurostat). Significantly smaller is the share of persons employed with a contract with a temporary employment company – 2.2 % of men and 1.5 % of women in the working population.

19% of employees are in part-time work

31% of females are part-time workers

2% of employees are employed in a temporary employment company

Because digitalisation is driving other forms of employment, like platform work or self-employment, we might conclude that part-time work is becoming a more and more attractive option. In particular, for knowledge intensive jobs this is more possible and accepted today thanks to portable technology, stable data access via the internet, cheap communication within and across borders, and the improved image of part-time work, for example perceiving it in some contexts also as a pillar of work-life balance.

The new trend of accepting part-time work more readily should not let us forget to

ask to what extent part-time is a privilege or merely the primarily available job option. This is important given that gender inequality is, among other aspects, expressed by the ability to have a full-time job contract and associated further career opportunities.

Another factor for flexibility is telework. Telework was not widespread before the 2020 COVID-19 outbreak, although already more common among high-skilled workers and managers. The share of employed people in the EU making use of telework at least from time to time was around 14%. The Joint Research Council of the EU concludes: "Until the outbreak of the pandemic, telework had mostly been used by high-skilled workers who do most of their work on computers, enjoy high degrees of autonomy, and are employed in knowledge-intensive activities. Within this group, the highest prevalence of telework was found among teachers (43%)" (Santo Milasi et al., 2020).

With the shutdowns and limitations of the COVID-19 pandemic "close to 40% of those currently working in the EU began to telework full-time as a result of the pandemic" (Santo Milasi et al., 2020). It has mainstreamed telework and boosted investment into infrastructure and technology in enterprises and organisations.

The digital nomad, changing t-shirts, co-working cafés and types of coffee as often as their mobile device, exerts some habitual attraction and is therefore very present in media and debates. But the data suggests that flexibility and working from home were, under normal circumstances, an interesting option for self-employed and middle-class workers, and also more common in the EU countries with a strong economy or with a strong digital infrastructure (such as Estonia).

Platforms

An original creation of digital transformation is crowd-sourcing and platform work. The similarity to outsourcing gives us a hint at the original intention behind some platforms – decomposing complex work into parts and distributing them to self-employed workers outside their own workforce.

Platforms facilitate the merging of purchasers and contractors. They offer infrastructure, set standards (terms of services) for both parties and earn a commission fee of a certain percentage of the transaction. Thanks to platforms, forms of labour that we thought were left in history – like domestic work or task-based salaries - are reappearing. This double movement might be seen as the key aspect behind platform-mediated crowd work argues the International Labour Organization: "crowd work might best be understood as part of a broader shift

Crowdwork: job offerings to an un-defined group of interested persons through a platform.
Cloudwork: mediation of jobs that might be fulfilled independent from the location, often a digital product.

towards more precarious and contingent labour as well as towards more automated hiring and management processes" (Berg et al., 2018, p. 6).

In fact, the involvement in platform-mediated transfers is very diverse. Someone who from time to time sells things on Ebay is active on platforms. Similarly, an antiquarian bookshop also engages on an online platform for second hand books. And in a lot of regions, local tourism offices offer an online booking system for the local hotel and guest rooms. Not all crowd work is precarious. Despite these different platforms and their different conditions, it is a trend that a lot of freelancers and businesses feel forced to join platforms.

Clickwork: low-level cloudwork
Microtasks/microjobs: low paid simple jobs with low intellectual or creative requirements.
Gig work: mediation of small jobs through a platform, locally bound.

Fields of Platform Work

	Cloudworking (independent from location)	Gigworking (dependent on location)
Microtasks and jobs	**Clickworking** (product descriptions, transcriptions)	**Microjobbing** (pictures of posters in supermarkets)
Macro and project work	**High qualified cloudwork** (programming, translation, texting, design)	**Qualified gigwork** (craft work, domestic services)

Source: Greef & Schröder, 2017, p. 19

The study "New evidence on platform workers in Europe" shows that platform workers, those people earning regularly a recent share of their income through platform-mediated work, are a growing but quantitatively small group of the European labour force (Urzì Brancati et al., 2020). On average, crowd workers, who are normally part-time, but work regularly, are younger (33,9 years in contrast to average 43,6 years), male (65%) and better educated than the average "offline worker". More often than on average they have a migration background. According to their working status, most of the crowd workers are doing it as a "side gig", an additional self-employment activity (41-45% of very active platform workers). Only between 10% and 19% of very active platform workers are working on a self-employed-only basis (Urzì Brancati et al., 2020, p. 52).

An important part of crowd work is "clickwork", the simple execution of digital micro tasks. The broader public is quite aware of messenger, delivery and on-location services. Also translations or texting, and (multi)media work or software development are crowdsourced. Play transcriptions, data entries, and marketing support also play an important role.

The main mode of payment is task-oriented, with factual payments averaging € 6.60 perhour for microtasks, that go up to € 23.10 for software development. Regarding the satisfaction of platform workers, the authors conclude: "In general platform workers consider their work highly flexible but monotonous (…) Despite being flexible, most platform workers are under constant monitoring.(…) The importance of the ratings for getting work in the platforms is very high in all types of platform work" (Urzì Brancati et al., 2020, p. 45).

Platform Workers

Source: Urzì Brancati, Pesole, Fernández-Macías 2020

sporadic platform workers	2.4%
marginal platform workers	3.1%
secondary platform workers	**4.1%**
earning a significant amount of their money or spending more than ten hours a week	
main platform workers	1.4%
more than 50% income and at least spending ten hours a week	

11% of the working age population

Platform Power and its Regulation

Aside from the technological aspect, platforms have created a new model of entrepreneurial control different to the old employment contract and to classical cooperation as self-employed workers. When a company outsources tasks mediated by a platform, it loses control and gives freedom to the contractors on how to execute the job. At the same time, the responsibility of the worker increases and is directly exposed to the market: "Old" forms of support (like the union, a worker's council or employment rights) do not apply to them. The managerial control is ensured by a mixture of (decreasing) organizational control and (increasing) market control. Furthermore, the proprietary platform technology itself offers the management digitally enhanced opportunities for control (Ivanova et al. 2018, p. 7 f.).

Control Instruments

Surveillance of the working process

Collection and analysis of performance data
(i.e. GPS, app activity, feedback)

Automated decision making
(i.e. what kind of offering will be on the worker's to-do-list, rating)

Automated messaging and nudging
(i.e. real time performance feedback, style of language, gamification)

The architecture and design of the platform
(i.e. what offerings appear and how, transparency)

These opportunities are sometimes so powerful that they lead to a de-facto employment when control over the employee is a fundamental criterion for employment in contrast to self-employment. In a comparative study from the European University Viadrina about two food delivery services on the German market, the authors summarize in a similar way as many other labour experts: "People who are deliberately kept in the dark about how the market works can hardly be considered entrepreneurs" (Ivanova et al., 2018, p. 22). From this perspective, platforms would need regulation in terms of defining the labour rights and employers' obligations. Trade Unions request that the definition of employment should be more broadly defined so that the benefits which employed persons have might be enjoyed by such de-facto-dependent persons. The position of the platforms themselves is that they are intermediaries between entrepreneurs. Others question this neutral nature for some platforms: "In the case of platforms offering services tied to a location, (...) it should be considered whether or not the platform operator should

itself be given the legal status of employer, in accordance with the law in the country in which the services are provided" (Jürgens et al., 2017, p. 38). Talking to the platform workers, they see themselves sometimes here, sometimes there, employee and self-employed.

"A possible solution would be to advocate the creation of a third category, such as the 'dependent contractor', which would be entitled to some of the basic benefits of employees; another possibility would be to extend basic rights to all workers, regardless of their employment status" (Urzì Brancati et al., 2020, p. 52).

Furthermore, the platform fair mechanics and transparency seem to be topics for future discussion and regulation. In 2019, the EU strengthened the position of platform workers (here understood as the business partners) in "online intermediation services" (EU 2019/1150).

For instance, trade unions advocate for fair and transparent rating systems, opportunities for workers to object if they don't agree with feedback, and the right not to engage in a contract without negative consequences.

These topics are related to the governance of platforms and their co-determination through the workers and their representatives. Co-ownership would also be an option. "One option is the old idea of a cooperative, which can take on new significance in the context of digitalisation. While many of the new digital platforms are financed via venture capital and face corresponding return expectations, a cooperative would be something like SME 'crowdfunding'" (BMAS 2017, p. 131).

From a competition policy point of view, the oligopoly of a few platforms allows them to gain from scale effects. Industry policy could help small and middle-sized enterprises in the platform industry in becoming more competitive – or through incentives for cooperation or regulation of too-dominant platforms.

Last but not least, the salary remains an important point - minimum salaries could be made obligatory by the state and also voluntarily included in the terms of services of the platforms. Crowd workers could be included in the public social insurance system.

What are the Platforms?

The website **www.faircrowd.work** of the German trade union, IG Metall, gives a comprehensive overview over the different platforms and their conditions.

Conclusions for Education

The drivers of digital transformation in the entrepreneurial context are **automatisation/robotics, platformisation** and new forms of **collaboration**. People need to understand better what these will mean for their concrete sector and profession and also for their role and rights as human parts in human-machine-collaboration.

Digitalisation has had an impact on the **employment relations** of many Europeans. It is a driver for flexibility through part-time and more location-independent work, for instance making family life and employment more compatible or enhancing work-life-balance. It is also changing the way in which companies are organized and affecting the role of the employee. Platforms are more and more integrated in working process and at the same time the amount of people earning their income mediated by platforms is increasing (platform workers or partial platform workers).

These processes are **evolving incrementally** and education might create a space where these concrete developments in a certain context could be reflected and understood, also in terms of their intentions and future strategies. Employees and platform workers need to understand better where this all should lead to in order to co-determine and influence the decisions.

Furthermore, education might address the **competence dimension** and support their learners to recognize and develop the knowledge, skills and attitudes necessary for being an active part of this digital transformation of the working sphere.

Platforms must also be addressed more explicitly. Focus points for these discussion could be the platform power, their mechanics and fairness and, related to these questions, their governance through society, users and owners.

The citizens' responsibility for **fairness and regulation** is a relevant aspect here. Platform power is also dependent on user practice – and citizens are not only platform workers but - in their role as consumers - stakeholders of the platform economy. Education might raise awareness on rights and obligations of users and platform workers.

In particular, **better collaboration between civil society** (for example organisations tackling consumer rights, digital rights and labour rights), VET institutions, and non-formal learning providers could be an adequate frame and approach to address these questions.

3. Transformation of the Working Space

Today, the Internet of Things is changing workplaces. When you enter an office building with the newest technology, you are already welcomed. Your number plate is identified when arriving by car or access to your smartphone/NFC chip or RFID sticker signalizes your arrival by foot.

Then, the company app says "hello". It noticed that you accessed the building while you logged into the company Wi-Fi network or due to your chip. Now you are able to choose one of the flexible working places. Look on the plan in the app and book the place you like. If you have meetings, you are automatically guided to one of the several meeting rooms – also managed through the platform. At the moment, ten working places are available. Thousands of small sensors inside the building are registering if somebody is using a workplace or not. If not, the app unblocks it. Arriving at the space, you might regulate light and temperature via the app. Maybe the system automatically applies it according to your preferences. After you leave the building, lights and heating are regulated automatically.

It sounds for most people like science fiction but it is simply combining some available features which are already installed in several newer office buildings. Including smart technology in new buildings is not as expensive as updating old facilities and it saves costs, because it allows use and maintenance of buildings in a very efficient way.

The Non-profit Perspective

In the non-profit sector, the cost-intensive self-hosted AI, digital facility management and big data solutions are still not considered as strategically relevant. On one hand, the potential of digitalisation seems to be underestimated here, but also another picture might be drawn. In contrast to larger economic structures, the variety of different purposes, sizes and styles of organizations and social enterprises do not fit a "one-size-fits-all" approach. Internationally connected organizations have more expertise in tools and technology for collaboration. A noteworthy contingent of activists and organizations is putting emphasis on *decentralized infrastructure and open source*. Those dependent on private donations put efforts into social media and campaigning. Others are muddling

through digitalisation with a pragmatic and less strategic approach: using a web-based translation here, or a survey tool or cloud for document sharing or backups, there. "In order to recognize the organization-specific way, and in order to assess and finally involve them, internal digital competencies and a professional organization are more important" (Edinger-Schons et al., 2020, p. 34).

How do you assess the potential of these new technologies for your organization?

	Big	low/ medium	don't know
3D	11	17.2	57.6
Blockchain	4.1	15.7	34.1
Internet of Things	10.8	24.5	24.3
Virtual Reality	14.7	27.8	15
Chat robots	7.5	20.8	12.4
Artificial intelligence	12.1	26.5	10.2
Cloud Services	42.6	49.7	1.7

Survey among German Non-Profit organizations and enterprises.

Co-Working

Facilitated by new forms of organization and flexible working models, co-working spaces have emerged as a trend. These office facilities offer flexible rental conditions and provide the typical office infrastructure for a number of different freelancers and small entrepreneurs. However, renting a temporary office space or outsourcing facility management is also becoming attractive for larger companies.

In particular in larger cities, co-working spaces are often for freelancers, small non-profit organizations or start-ups with the rare opportunity to rent to affordable

conditions. The specific profile of the space also makes it an attractive option. Several co-working spaces define themselves as hubs, serving as a catalyst for collaboration and networking, curating the composition of their tenants and offering social activities and qualification.

Workspace and People Analytics

Several studies point out that employees have mixed feelings about the digital transformation of their workspaces. The advantages from the perspective of employers seems to be a better work-life-balance, more flexibility, more simple access to information or more healthy working environments. At the same time, people have concerns like dependence on IT and the perceived obligation of always being available. And surveillance and fear from over-automatisation play a growing role (IDG Business Media, 2018).

The latter concerns point out the necessity for human datafication in order to make the most of connected and ubiquitous IT – with workplace analytics. Microsoft promotes Office 365 as a tool with analytical potential.

> *"Workplace analytics provides visibility into how work happens in companies. It's pulling data out of Office 365, so knowledge workers all day they're sending emails, they're going to meetings, they're sharing documents. It takes it and it turns it into a set of behavioural metrics. And then once they determine an insight, they can then share that out using other tools."*
>
> From a Microsoft promotion for people analytics

Workspace analytics: Digital measurement and analysis of employees' performance.

The feasible gain of such systems is to bring more evidence into decisions and theory building. Theoretically such systems would also allow *HR* personnel to make more just decisions and help employees and employers to shape the working space according to the needs and very individual qualities of the employee. If you are producing less emails than your colleagues per hour but with high feedback rates, maybe you should take responsibility for the key accounts? However, the technology might also

be used for the opposite, for control and simple-minded performance optimization.

Privacy, data protection and AI guidelines in the labour context mark the difference between both ways of using the technology. The Article 29 Working Party, the predecessor of the European Data Protection board, values the rights of citizens, employees or workers with the same worthiness of protection.

"The contents of electronic communications made from business premises enjoy the same fundamental rights protections as analogue communications; consent is highly unlikely to be a legal basis for data processing at work, unless employees can refuse without adverse consequence; performance of a contract and legitimate interests can sometimes be invoked, provided the processing is strictly necessary for a legitimate purpose and complies with the principles of proportionality and subsidiarity" (EU Article 29 Data Protection Working Party, 2017).

The EU commission also has a critical eye on AI in the labour context, as expressed in the White Paper on Artificial Intelligence - A European approach to excellence and trust: "In light of its significance for individuals and of the EU acquis addressing employment equality, the use of AI applications for recruitment processes as well as in situations impacting workers' rights would always be considered 'high-risk'" (EU COM 2020/65 final, p. 18).

The more AI comes into play, the more important it is to not only look for purposes and data collection or storage. How personal data is to be processed and how the extracted information will then be applied to all employees or to a concrete individual must also be monitored: "The guidelines can mean two distinct sets of rules implemented electronically: the learning algorithm, which can be, for example, a process used to infer a general rule based on historical data; and the (algorithmic) decision rule that is a rule which is applied to concrete individuals and, after processing data about those concrete individuals through some kind of model, generates a prediction, recommendation or decision about them" (Loi, 2020, p. 20).

Conclusions for Education

The Internet of Things and ubiquitous computing found its way to many working spaces in Europe, although to different extents and at different intensities. Beyond management and property developers, employees and civil society also need to become more aware about the available technology and its potentials and dangers.

One clear danger is in the eye of European citizens and policy experts that **unregulated and uncontrolled datafication** in the labour context could harm labour rights and individual freedom. **AI and big data literacy** in the labour context needs to be improved and distributed more effectively. In particular, people analytics and incomprehensible algorithms in the labour context require a critical assessment, co-determination and a sufficient understanding of the involved employees as to what is tracked, who is analysing the data, how it is going to be processed and what are the consequences for them.

A big potential for more digitalisation of the working place can be identified in the **non-profit sector**. The sector is very relevant for the educational field, since many organisations offering non-formal education are part of this sector. A more holistic and strategic approach to digitalisation of their organisations would help the sector to optimise internal processes, contributing to the development of digital competence of their staff and educators and also increasing the quality of their digital education. Critical reflection must be part of this transformation. The guiding question is how the value-driven self-conception of the actors is going to be apparent in their **factual usage** of digital technology. Following higher standards that are compatible with the self-conception entails investment in privacy-enhancing technology and processes, in open source or decentralised infrastructures.

4. Toward Upskilling and Lifelong Learning

In 1988, Shoshana Zuboff described how the workers in a paper mill were confused by the computerisation of production processes: "Instead of using their bodies as instruments of acting-on equipment and materials, the task relationship became mediated by the information system" (Zuboff, 1988, p. 62). As a result, workers "reiterated a spontaneous emotional response countless times – defined by feelings of loss of control, of vulnerability, and of frustration." A lot of them were concerned how their cumbersomely acquired (traditional) craft skills and production knowledge related to the changed way of paper production. During the months, the author made two contrary observations. One group of workers upgraded their knowledge, they learned new aspects about paper production. Others, however, "would make itself an appendage to the system, mechanically carrying out the computer's directives" (p. 68). One crucial competence that helped the first group was the stimulation of their ability to explore, to try and fail, and to critically assess new opportunities. They were eager to "exploit the informating capacity of the technology and to become a new source of critical judgement" (p. 70).

Obviously, education systems should take these two groups into consideration. Strengthening the ones with this crucial transformative competence and also taking care to not leave the others behind. As a starting point, education and training would need to understand what helps workers during transformative situations. We need to understand how the successful "new" learners were able to cope with uncertainty, to draw motivation and what kind of workplace environment they needed in

High Digital Transformation Degree in Industry Sectors

Publishing, films & television, music...
Telecommunications,
Computer programming, information
Travel agency, tour operator

≥50%

Repair of computers and communication
Accommodation

≥ 40%

Wholesale trade

≥ 30%

Professional, scientific and technical...
Real estate activities
Computer, electronic and optical products
Trade of motor vehicles and motorcycles

≥ 20%

Administrative support
Retail trade, Coke, petroleum, chemical, plastics
Utilities (Electricity, gas, water, waste),
Electrical equipment, machinery
Motor vehicles, other transport equipment
Wood, paper, printing, Furniture and other manufacturing
Transport and storage

≥ 10%

Beverages, food and tobacco
Textiles, wearing apparel, leather
Basic metals & fabricated metal products
Construction

<10%

Enterprises with high or very high digital intensity index by economic activity, EU, 2017 (% enterprises)

source: Digital Transformation Scoreboard 2018 (EU EASME, 2018, p.19)

order to continue with their learning journey.

Especially the understanding of learning as a lifelong learning and continuous process seems to be a solid basis for new approaches. When workers are enabled to see their whole life as a personal history of experiences, learning from these and having new ones, they are able to draw connections between situations from different

social roles or life phases. Transferring them to an unknown situation might help to see more opportunities, also to view the current situation only as a relative catastrophe – not an absolute one. This small difference between relative and absolute is the seed for emotional stability and taking learnings from the situation. Lifelong learners build competencies that apply to different contexts and they give priority to working on those abilities that are relevant to act in complex situations. Ideally, they are themselves defining what kind of learning they need and asking for support, while the education just needs to give inspiration, impulses, offerings or constructive feedback.

A crucial aspect here is to work on the ability of adult learners for self-reflection, understanding what one knows and is able to do, connected with a self-conscious attitude of what one is able to learn. Here the new concept of "LifEComp", the "European Framework for the Personal, Social & Learning to Learn Key Competence", comes into play: "Development of the Personal, Social and Learning to Learn competence is crucial. It has the potential for boosting inclusion and resilience to uncertainty and change, through socio-emotional skills that are often found to be as important as cognitive and meta-cognitive skills for academic attainment, career, health and wellbeing" (Caena, 2019).

Being self-aware means it is a smaller step to initiate action in a situation where nobody else is explaining clearly what steps need to be taken. And in the context of digital transformation, the appropriation of knowledge about the technology needs to take place in a self-reflective, self-conscious and proactive way.

ICT competences are increasingly perceived by European policymakers as part of basic skills, backed by research:

"Evidence shows that to keep up with digital developments, simply improving digital literacy is not enough. The ESJ survey data show adults in jobs requiring at least moderate-level ICT skills also require a strong level of complementary skills, such as foundation skills (literacy, numeracy), soft skills (planning and organisation) and behavioural skills (communication and teamwork)" (Cedefop, 2017, p. 3).

These and other similar considerations led the OECD to use the term 21st century skills in educational debates on the digital transformation of work. Grounding the work in key competencies that lead to the foundations of the PISA studies, the OECD is providing in their project "Future of Education and Skills 2030" the term *transformative competences* as a meta-category of competences. These support the learners in taking action, reflecting and anticipating. The three transformative competencies are reconciling tensions and dilemmas, creating new value, and taking responsibility.

When digital competences are suitable as a transformative competence, the challenge is to overcome a too-close association with IT knowledge or of *digital* literacy as only a further development of traditional literacy. Communication and living together in our society depend more on the generation of more data that is increasingly diverse, on information extraction from this data by algorithms, and on the application of this information via machine-mediated assistance. Other aspects must be included,

for example *data literacy*, the crucial ability "to derive meaningful information from data, the ability to read, work with, analyse and argue with data, and understand what data mean" (OECD, 2019).

In a similar way, the EU seeks to conceptualize digital competence as a key competence. The Joint Research Council developed under the roof of the commission the European Competence Framework DigComp, which aims to support citizens "learning to swim in the digital ocean". Although not mainly developed for the labour context, efforts are currently used to "encourage the use of DigComp by labour market intermediaries in the (digital) skills assessment, up-skilling and matching processes" (Centeno et al., 2019, p. 10).

European Strategy: Employability

In recent decades, the response of European policymakers to unemployment has been education and training. The strategic document "A New Skills Agenda for Europe" describes the challenge in regards to digital competence concisely:

"The rapid digital transformation of the economy means that almost all jobs now require some level of digital skills, as does participation in society at large. The collaborative economy is changing business models, opening up opportunities and new routes into work, demanding different skill sets, and bringing challenges such as accessing upskilling opportunities. Robotisation and artificial intelligence are replacing routine jobs, not only on the factory floor, but in the office" (EU COM/2016/0381 final, p. 7).

In particular, the European Commission is demanding more qualification close to the working space, admitting that "only 1 in 10 adults currently participates in organised learning, most often those with higher skills levels and employees of large companies".

The Commission has put emphasis on improving *employability* through lifelong and also competence-centric learning. The general concept is, since 2006

Skills:
The practical ability to perform a task or carry out a job.

Upskilling:
Equipping learners with skills demanded on the labour market, making the skill-mismatch between demand on the labour market and employee smaller.

Data literacy:
Ability to derive meaningful information from data, the ability to read, work with, analyse, understand and argue with data.

ICT skills:
Information, computation and technology skills.

(and revised in 2018), drafted under the title "Key Competences for Lifelong Learning" (EUC 2019-05).

"Key competences are those which all individuals need for personal fulfilment and development, employability, social inclusion, sustainable lifestyle, successful life in peaceful societies, health-conscious life management and active citizenship. They are developed in a lifelong learning perspective, from early childhood throughout adult life, and through formal, non-formal and informal learning in all contexts, including family, school, workplace, neighbourhood and other communities."

Complementary to the mentioned DigComp 2.1 framework, also EntreComp for *entrepreneurship competence* needs to be mentioned here. It focuses more closely on the labour context, although the term *entrepreneurship* might be partially misleading as the frameworks do not tackle the entrepreneur but the employees. Entrepreneurship is here a description of a general competence of proactive mastery of challenges and ability of value (or impact) creation in social, cultural and economic contexts: "EntreComp defines entrepreneurship as a transversal competence which applies to all spheres of life: from nurturing personal development, to actively participating in society, to (re) entering the job market as an employee or as a self-employed person, and also to starting up ventures (cultural, social or commercial)" (Bacigalupo et al., 2016).

Generally, such competency frameworks want to be a source of inspiration for innovative learning designs in different learning fields. Through their reflection, they also contribute to quality development in the broad educational area. Their indicators and proficiency levels can also build a basis for (transferable and comparable) competence assessment.

This strategy towards strengthening the key competences seems to be coherent with the labour market´s needs. Scanning online vacancies on required skills, Skills-OVATE is a tool that shows what kind of skills are required for the broad diversity of job descriptions in Europe from barber to business manager. The top ten in 2020 are (in hierarchical order):

Competence:
The bundle of knowledge, skills and attitudes and also the ability to apply them in a variety of (complex) situations.

Transformative Competence:
A competence supporting learners to master changes and to adapt to them.

Key Competence:
A competence useful in many different roles, situations and activities, in contrast to specific competences.

2020 Top Ten Demanded Skills

adapt to change,
English,
use a computer,
work as a team,
teamwork principles,
assist customers,
use Microsoft Office,
create solutions to problems,
think proactively,
work independently.

The Skills OVATE tool is also an inspiring exploration space for educators and learners. Use it for a deeper analysis for your country or have a look at what kind of skill-sets are required in what kind of positions. Compare demanded and factual profiles with your learners. https://www.cedefop.europa.eu/en/data-visualisations/skills-online-vacancies

Source: Skills-OVATE

According to this vision and aiming to respond to the challenges of digital transformation, the employees and employers should both engage in upskilling and competency-centric learning. Therefore, the position of the European Economic and Social Committee (EESC) must be mentioned here. The EESC is an advisory body of the EU parliament, council and commission where workers and employers' perspectives are equally represented. In the EESC opinion on "Digitalisation, AI and Equity – How to strengthen the EU in the global race of future skills and education, while ensuring social inclusion" the experts conclude: "Continuous learning is about learning for work, contributing to personal and professional fulfilment, social inclusion and active citizenship," and also would be a "right for everyone" (EESC, 2019).

Lifelong Learning (LLL):
All learning activity undertaken throughout life, having an impact on knowledge, skills, or attitudes.

Continuous Learning:
Education or training after initial education and training in order to improve or update knowledge, skills or attitudes, or continue their development.

Non-formal Education:
Learning embedded in planned activities not necessarily explicitly designated as learning (in terms of learning objectives, learning time or learning support). Non-formal learning is intentional from the learner's point of view.

Formal Education:
Learning in an organised and structured environment like an educational institution or school. It is intentional from the learner's point of view and typically leading to validation and certification.

Informal Education: Less structured and not pedagogically planned activity with a learning effect – sometimes unintended, and if institutionalized, then often not perceived as learning (sports, culture activity, household…).

Approaches for Upskilling

The EU Commission's "Recommendation on Upskilling Pathways" describes how upskilling should take place (EUC 2016-12).

Offering adults access to upskilling pathways and also identifying priority target groups in national contexts

Offering of skill assessments

Offering tailored and flexible learning offers

Recognition and validation of competences

Ensuring effective cooperation and partnerships

Optimizing outreach to new learners

Upgrading strategies on such a broad scale and scope lead *beyond the company* as the main educational frame. Employers need to recognize training as an instrument for managing the transition and as an investment that pays out, although its value is often less measurable. Because learning not only addresses classical knowledge and skills, but also attitudes and emotion, the process is less predictable, repetitive, and less controllable in the positive and in the negative sense. Employees need to feel empowered and require spaces where they are supported in both – a personal developmental and a digital learning process. *Tailor-made* instead of *Taylorism.*

For instance, more individualized learning designs could support them, individual competence assessment and vaster outreach of quality education under this priority to broader groups of employees. Investment in modular learning offerings and factual opportunities to apply the new learning inside and outside the company are also important to mention. It is evident, that such learning requires cooperation between businesses, state and civil society.

In line with this idea is the idea of *learning accounts*: a digital competence and knowledge portfolio which is portable and shows employers and learners the qualification profile. One of the newest is the French "Compte Personnel de Formation" (CPF) (Martin, 2017, p. 8). The high-level expert group of the EU commission on the impact of digitalisation on the labour market promotes a European instrument, the "Digital Skills Personal Learning Account" (DSPLA), which gives "a personal right to the owner to attain training in digital skills. The DSPLA will be complemented with an electronic passport where the track record of the attained individual digital skills should be kept and accessed everywhere by all stakeholders (EU COM 2019-04).

In particular, the non-formal education sector has a crucial role to play in connecting learning experiences across life phases, across locations, and across learning contexts, enabling learners to apply it in their different social roles. Therefore, the EESC gives non-formal education (new) strategic priority: "Non-formal education is key to furthering inclusive education systems and the key avenue for lifelong and life-wide learning" (EESC, 2019; 4.9).

Another partner for upgrading or upskilling is civil society. In youth organizations, citizen associations and initiatives, people gain knowledge and expertise, especially the crucial communication and collaboration competence, formerly labelled as 'soft' skills. The role of civil society and its organizations or initiatives as (informal or non-formal) education space needs to be given more awareness, as it is not yet explored by the organizations themselves and not recognized by the education system.

In particular, for effective and sustainable education, the question stays central: What kind of (cooperative and methodologically blended) setting would be appropriate, where workers could tackle their attitudes or knowledge in regard to problem-solving in technology-rich environments?

Such upgrading strategies, also the integration of digital competence into formal education, seem to a significant extent to be successful. The level of technical skills

in the broad population has increased tremendously. Work is less physically straining and the growth caused by innovation led to new jobs in Europe: "29 percent of those employee experience physical easing" while "15 percent of the employed feel decreasing requirements" concludes the Monitor for digitalisation at the work place of the German Ministry of Labor and Social Affairs (BMAS, 2016; p13 f.).

29% experience physical easing through digitalisation

15% feel decreasing requirements

One side effect of digitalisation might be that in some niches, 'old' skills are again demanded. Somebody has to repair the old cameras, needs to understand old software languages, be able to sew a quality shoe by hand or to bake a long play vinyl record.

Challenges

However, all developments can be assessed differently depending on perspective. According to a German study, qualified women gain more (47%) than men (41%) from digitalisation in terms of flexibility, but less qualified women significantly less (31%) than men with the same qualification level (44%). Interestingly, among people with children, more men than women gain from new flexibility. Working from home is used by 14% of women and 18% of the interviewed men (D21/Kompetenzzentrum Technik-Diversity-Chancengleichheit, 2020).

Also, the gender gap for ICT faculties exists among the more highly educated: "Having ICT related studies increases the probability of employment for men between 2 or 3 percentage points. For women, the probability of being employed with ICT-related studies decreases between 1 and 2 percentage points, in comparison to women with other type of studies" (Tarín Quiros et al., 2018, p. 5). Consequently, the study "Women in the Digital Age" concludes:

"Most of the restraining factors preventing women from fully participating in the digital era are based on stereotypes and preconceptions."

(Tarin Quiros et al., 2018, p. 9)

In Example Germany:
Overall Digital Index: 55   ♀ 51 ♂ 61

The index is measuring the degree of digitalisation of the German society based on a representative study.

Digital Gender Gap

	Access to digitalisation	User behaviour	Digital Competence	Openness
	Internet access, available device	Using digital apps on a regular basis, average time spent with the internet	Knowledge about digital topic, technical competence	Attitude toward internet usage, digital devices and digital trans-formation
∅	72	39	49	52
Men	76	42	55	57
Women	68	36	43	47

Source: Initiative D21 e. V. - Digital Gender Gap

The German Association of Trade Unions reports that benefits by qualitatively better digitalisation seems to be *unevenly shared between age groups*: "The share of electronic communication and cooperative project work via the internet increases between those under 25-years-of-age through those between 25 and 44-years-of-age, and decreases again in the higher age groups." (Holler, 2017, p. 18).

Furthermore, despite all narratives of an improved work-life-balance thanks to digital flexibility, the group with the lowest wages experiences the opposite: "A deterioration of work-life-balance is mentioned especially by the full-time employed low-income earners with a gross up to €1,500 (27 %), which together with the employees of temporary employment companies are the only groups reporting to a higher amount a decrease instead of an increase of work-life balance. The contrasting observation can be made for the part-time employees with high salaries up to €3,500. Here, 41% see an increase of work-life balance" Holler, 2017, p. 70).

Someone at risk of being *dropped-out* might also be more pessimistic. It's possible that these people belong to the previously mentioned 15% that feel decreasing requirements. Where could such a person learn? How can they cope with the accompanying emotional instability and with the social consequences of unemployment?

OECD: Future of Education on Skills 2030

Successful countries with the *highest share of very highly skilled people* teaching adults "problem solving in technology-rich environments" in Europe.

Europe	Outside Europe
Sweden (9% of the population)	**New Zealand** (10%)
Finland (8%)	**Japan** (8%)
The Netherlands (7%)	**Canada** (7%)

OECD Education GPS

From a macro-perspective taking a look at the OECD data above, we might wonder if Europe is in danger of losing up to one third of the population in the race for future skills (minimum 31% of Europeans)? For those low-qualified persons with an employment contract, digitalisation may seem to be a threat. Although not able to understand the digital management and tools around them, they are dependent on them. King Wan Poon, the director of the Singapore Institute of Technology, has the opinion that data driven management of human resources could help workers reorient themselves. One could track workers, create profiles, score and compare them in order to find tasks that are more appropriate for their profiles (Wan Poon, 2019).

Obviously, this scenario is grounded in some ethically questionable assumptions. First, it requires unidirectional transparency. The employee, not the employer, is transparent about how, what and for what concrete purpose they generate the massive amount of personal performance data. Second, the fiction of a working contract is a contract between equals, giving employers a certain freedom of how to perform a required task. Third, fundamental rights are at risk of being violated as this data is intimate and gives much more information about the employee than required. Beyond such generalized criticism, one might ask if such an approach is fitting to the strategy of upskilling.

Fair and just Working Conditions:
(**1**) Every worker has the right to working conditions which respect his or her health, safety and dignity.
(**2**) Every worker has the right to limitation of maximum working hours, to daily and weekly rest periods and to an annual period of paid leave.
Charter of Fundamental Rights of the European Union (Art. 31)

Social Security and Social Assistance:
(**1**) The Union recognises and respects the entitlement to social security benefits and social services providing protection in cases such as maternity, illness, industrial accidents, dependency or old age, and in the case of loss of employment, in accordance with the rules laid down by Union law and national laws and practices.
(**2**) Everyone residing and moving legally within the European Union is entitled to social security benefits and social advantages in accordance with Union law and national laws and practices.
(**3**) In order to combat social exclusion and poverty, the Union recognises and respects the right to social and housing assistance so as to ensure a decent existence for all those who lack sufficient resources, in accordance with the rules laid down by Union law and national laws and practices.
Charter of Fundamental Rights of the European Union (Art. 34)

5. A Future without Labour?

By Ramón Martínez

In the year 1930, John Maynard Keynes predicted that "in a Hundred Years' Time" technology would have advanced sufficiently for countries to achieve a fifteen-hour work week (Keynes, 1963). There are many reasons to believe this prediction was accurate. Looking at the technological revolutions of the past and those happening around us, we are capable of it. And yet this labour revolution didn't come to happen. Instead, technology has been utilised to monitor, optimize and make us all work more.

Working fewer hours was once seen as an essential indicator of economic and social progress. This might still be true in a few European countries. There is conversation about working less hours, first implementations of under 30 hour working weeks. Meanwhile, working trends add up uncompensated extra hours, self-exploitation in search of fulfilment is common, and working less is often seen as an indicator for individual laziness and lack of ambition. Still, the main problem that we face on our path to 2030 is a different one: unemployment (Graeber, 2018).

"Big corporation to cut 12000 Jobs in Europe" and "a complete sector of labor to disappear due to automation" are among the headlines which periodically flood newspapers and social media in the last decade (Tsang, 2019). Journalists and influencers tend to overstate the extent of machine substitution for human labour and ignore the strong complementarities between automation and labour that increase productivity, raise wages, and augment demand for labour.

We receive this news with fear, often panic, and rapidly receive a countermeasure, hopeful statement. Maybe one indicator of this perceived ambiguity is the regularly repeated public debates, oscillating between the two positions: The end of the world is near, all jobs will disappear, and we don't need to worry, automation will not wipe out our jobs. Both sides are backed by research, supported by experts and hyped through social media in fully opinionated articles.

Will jobs disappear? Not all of them, and others will appear. In the same form that a future with zero unemployment is impossible, a future with zero jobs is far from imaginable (Hawksworth & Berriman, 2018).

Automation has not wiped out a majority of jobs in recent nor further removed decades. A classic example worldwide is agriculture. As jobs in the sector have gone from representing 40-60% of labour in a country to under 5% due to automation,

technology and optimization, those individuals have migrated to other fields of work (Autor, 2015).

Automation substitutes labour. And it also complements and redefines it, raising output in ways that lead to adjustments in the forms of work and higher demand for labour. An example of these adjustments is found in fields such as the stock market. As the job opportunities for accountants have diminished, requests for informatics have started to rise. Presently, some of the top corporations in the field have the same number of employees, of which three quarters are IT experts. In the same way, the need for less employees to reach higher profits allowed opening more business branches and new stakeholders to venture into new business markets.

These changes have started and already led to a polarisation of the labour market, quickly dissipating the mid-skilled worker, reshaping the types of jobs available and how those jobs pay. We see how robotics and automation are enhancing many existing jobs, such as surgery; designing new ones, such as space mining; and slowly replacing humans in many others, while we don't have yet a broadly shared positive vision of future progress. Maybe we might also shift the question: Will we require with each wave of automation less jobs? We don't know. Maybe we will require a shift in perspective to consider this as a desirable advancement, as for generations we have defined each dimension of life around labour.

Each day there are fewer and fewer jobs that a robot cannot do better. In the transport field, we are very close to a time where long distance truck drivers will not be required. Of course, truck drivers do more than drive, and these non-driving tasks will continue to be in demand (Gittleman & Monaco, 2019). Technology will likely transform the status quo in the trucking industry, while it does not necessarily imply the wholesale elimination of the demand for truck drivers as conventional media and influencers suggest.

As we can see in the vision of the Starksy Robotics company: "We're working to make trucks autonomous on the highway and remote controlled by drivers for the

first and last mile. Our trucks will make roads safer while giving drivers meaningful work close to their homes and families" (Starksy, 2019).

Other companies like Photoneo, based in Slovakia, offer automation solutions such as moving boards and placing them into packing paper, requested by IKEA Industry (Association for Advancing Automation [A3], 2019). Their packaging solution deals with accuracy of 2 mm over 10 packages per minute. Just one example of many automations in inspection, picking and handling. Repetitive and risky jobs we would rather not give to a group of people.

Just Walk Out is a company that automates stores through cameras and sensors to migrate from cashiers and self-checkout stations. This technology enables shoppers to simply enter a store, grab what they want, and just go. Branded as a way to simplify shopping and eliminate checkout lines, it is also seen with fear by workers because of the high impact on unemployment due to the disappearance of supermarket cashiers. At the same time, it is a job which reports very low satisfaction and salaries.

Still, Just Walk Out makes clear that their technology supports the disconnection of labour from monotonous, less-valued tasks: "Retailers will still employ store associates to greet and answer shoppers' questions, stock the shelves, check IDs for the purchasing of certain goods, and more - their roles have simply shifted to focus on more valuable activities" (Amazon Just Walk Out).

Most experts do agree that automation will soon take over a lot of our jobs. But they don't all agree that that will mean mass unemployment. Agriculture is also an example, going from over 50% of jobs to under 5%. Where have all those jobs gone? We live in societies with many more total jobs than before.

Despite having replaced so many stock traders with software, Elisha Wiesel says that Goldman Sachs still employs the same number of people - and that their jobs have been enhanced by automation. By 2025, across the financial industry, artificial intelligence is expected to replace 230,000 human workers (Autor, 2016).

A Shifted Perspective toward Social Activity

Could we say we are starting to celebrate the end of hazardous, monotonous, dirty and irrelevant jobs? It is not that simple, since labour has become the centre of our lives. In the last century, we began to disconnect from family, community and cultural elements that bring meaning to life outside of the workplace. The happiness and comfort achieved through socializing shaped the feelings of purpose and belonging and represented our non-work time. Without these experiences of belonging to a group and a place, leisure lost its meaning, transforming work from a means to an end to the end in and of itself. Happiness is now also connected to productivity and workplace achievements. Unemployment became a negative trait, with connotations

Right to work:

(**1**) Everyone has the right to work, to free choice of employment, to just and favourable conditions of work and to protection against unemployment.

(**2**) Everyone, without any discrimination, has the right to equal pay for equal work.

(**3**) Everyone who works has the right to just and favourable remuneration ensuring for himself and his family an existence worthy of human dignity, and supplemented, if necessary, by other means of social protection.

(**4**) Everyone has the right to form and to join trade unions for the protection of his interests.

Universal Declaration of Human Rights (Art. 23)

Freedom to choose an occupation and right to engage in work:

(**1**) Everyone has the right to engage in work and to pursue a freely chosen or accepted occupation.

(**2**) Every citizen of the Union has the freedom to seek employment, to work, to exercise the right of establishment and to provide services in any Member State.

Charter of Fundamental Rights of the European Union (Art. 15)

of laziness and not contributing. This is a difficult mindset to shift, as it has been reinforced for generations.

Keynes connected his technological prediction with a rise of leisure time. As we have lost the meaning of this concept, it can be useful to think about it from a contribution perspective. Contemporary societies demonstrate a focus on economic contribution, but there is a possibility to open that view to include social and cultural forms.

As money is necessary to fulfil our basic needs, it makes it complex to imagine a celebration of higher unemployment in the digital transformation. Therefore, one long term goal needs to be the support of people whether they work or not. That everybody has equal rights, opportunities and quality of life. Every citizen needs their basic needs covered, and for this to happen, they require money. If they don't work, governmental welfare systems exist which provide this economical compensation, but it is a system based on labour that collapses with high unemployment rates. In societies where the economy requires constant flow of money, it is important to discuss the social system – any reinvention of the European social systems and the welfare state would not only need to react to digital transformation but also radically change social relations.

An alternative that is gaining attraction between political and social movements in

Europe and beyond is a Universal Basic Income (UBI). This approach to economic redistribution breaks the connection between welfare, employment and other conditions, providing each and every citizen a periodic cash payment to cover their basic needs (Kurzgesagt – In a Nutshell, 2017).

Such a safety net, as some view it, can be the answer to the uncertain futures the digital transformation brings, including the fluctuating and different forms of labour across Europe. As the European Commission shared: "Ensure neutral social protection against unemployment, sickness and other life circumstances independent of employment status. The increasing number of Europeans with non-standard employment should have access to social protection e.g. through portable benefits attached to the worker rather than the job or the establishment of an 'underemployment insurance' to smooth out fluctuating incomes in the 'gig economy'" (EU COM 2019-04, p. 42).

Universal Basic Income

1. Periodic:
it is paid at regular intervals (for example every month), not as a one-off grant.

2. Cash payment:
it is paid in an appropriate medium of exchange, allowing those who receive it to decide what they spend it on. It is not, therefore, paid either in-kind (such as food or services) or in vouchers dedicated to a specific use.

3. Individual:
it is paid on an individual basis—and not, for instance, to households.

4. Universal:
it is paid to all, without means test.

5. Unconditional:
it is paid without a requirement to work or to demonstrate willingness-to-work.

Furthermore, contemporary social movements such as Black Lives Matter are restating the importance of addressing the economic gap to support diverse societies: "As long as we have a racial wealth gap, we're going to have a problems with race," shared Patrick

Mason, an economics professor at Florida State University (Movement for Black Lives [M4BL], 2020). And this situation translates to all layers of society (Robb, 2020). Guaranteeing a basic economic support for all citizens is a powerful tool to eradicate poverty and decrease inequality.

This demand of a consequent redistribution of wealth aligns with the values of UBI. Described under various names such as *Citizens, Minimum* or *Guaranteed Income*, UBI has been implemented in long term projects in cities, regions and countries across the world. These implementations, in countries such as Kenya, India, Finland, Spain and Canada are diverse in their shape: in cases like Spain, it is being given to families, breaking the individual element, or put in contrast with conditional schemes that involve job searching or work for the municipality. Although the impact on beneficiaries is positive, many of these trials were not continued.

Benefits of these implementations are diverse and interesting. As a social worker, I have met individuals that saw a stigma in applying for social support, choosing poverty over registering; single parents not receiving their pay check because of missing a paper to justify their welfare status. As soon as they submitted it they received a back payment from the previous month, but spent weeks with no money. These are cases that the unconditional dimension would end in favour of personal freedom.

But there are also fears. A common fear from those opposing UBI is that citizens will become lazy and decide not to work, as they have no need for it. Research shows that this is not true. This aligns with previous explanations about the central role that employment has taken in our lives; work has become our socializing and fulfilment space. Beneficiaries of UBI gain the freedom to decide what they want to do with their time, including leaving current jobs, although it mainly represented a small reduction of working hours. For those leaving work, they shift into more enjoyable and fulfilling fields. The reasons are many, ranging from continuing their education, starting their own ventures, finding another job, taking care of a dependent family member and volunteering. Of course, there will also be people who decide to spend their time on the sofa or surfing the web, but the number is as anecdotal as in current society. Looking back at the forms of contribution to society, it seems that economic security can be a tool to shift towards social, cultural and economic forms of engagement.

Looking at unemployment rates and work satisfaction, we face a reality that there are people who would love to work and workers who hate their jobs. This safety net would allow this reshuffling of working positions.

Another fear is related to those jobs that are currently underpaid or lack fair conditions. Hosting a workshop on UBI with children few years ago, one of the participants said how "with that money, my mother won't clean toilets for so little". Something important about imagining future scenarios is that we can't look at them with the mindset that we currently have, but with the mindset of the future. An entrepreneur starting their venture could go to friends and family to ask for a percentage of their UBI as investors to pay back after a year with better conditions than through a bank loan.

Knowing that everybody has enough to cover their basic needs brings us closer to ending poverty, with the consequences it will have on reducing homelessness and crimes related with that poverty. This is one of the dimensions where more intensive research suggests that people tend to spend such money on necessities like food and shelter, rather using it to fuel addiction or 'wasting' it in some other manner.

Two Perspectives on Universal Basic Income

people will be lazy and not work	people will find other
jobs won't motivate people	meaningful activities as workers
it is too expensive	or active citizens
it will just raise prices	self-efficacy as active and useful
it will not fix poverty and inequality	part of society will drive people
it is just a populist measure	it partially replaces
for political power	bureaucratic social structures
it will affect migration	other measures for price control
(illegal) immigrants will be	could complement the transition
the only workers	it will erase poverty as a basis
it is the gate to deregulation and	for inequality
cuts in government spending for	it will affect migration
the welfare system	

Continuing to think about crime, the unconditional dimension of UBI has the potential to lower corruption, fraud and submerged economies as there is no fear of losing the received income and there is an incentive to make labour life official for retirement benefits.

But what about job searching? Will the employer call after an interview with a better offer instead of the worker accepting any conditions because, if not, someone else will? It is possible. Economic security provides a strong position of power to negotiate for better conditions and salaries.

Who Pays?

At this point, we need to dedicate some words to how to fund a Universal Basic Income. The first calculation necessary would be how much it would cost? Any UBI estimation that only multiplies the cost of the UBI by the population is a red flag that the total cost has been inflated. A true cost estimation considers who the net contributors and net beneficiaries will be, and the rate at which we gradually switch people over from being beneficiaries to being contributors as they get richer.

Once we have this target, a first approach to financing it is clarifying how to tax the loss of jobs due to the automation of labour in this digital transformation. Companies are automating factories, closing stores to focus on online shopping and shifting from employees to artificial intelligence work in schemes to raise their end-of-year profit. With current employment, welfare and economic systems, this is a disaster we need to control. In a UBI system, part of that extra profit is invested in the jobs it replaces.
it is already clear that one key reason that brought UBI into international relevance is the loss of jobs due to the automation of labour in this digital transformation. The COVID-19 aftermath in 2020 has given us plenty of examples of big retail and service corporations taking advantage of the regulations to close shops and fire employees. The perfect excuse for a reality of focusing on online shopping and raising end of year profits.

From the perspective of existing funding, a first approach by many researchers starts from the re-distribution of already existing antipoverty schemes and programs (with exception of education and health) from the government. This proposal connects with the unconditional dimension of UBI, making unnecessary complex bureaucracy administrating the welfare programs. For instance, in Nijmegen, in the Netherlands, roughly 90 million Euro is spent for welfare, but it costs 16 million euros to run the bureaucracy. And if we are thinking about all the jobs that will be lost in this process, it might be a result of thinking with a current mindset, because on the other hand, some jobs might migrate to other required jobs, and some might become unnecessary.

In order to complement this funding, other ideologically controversial measures proposed include a redistribution of military spending and redefining income, wealth

and land value tax expenditures. Research shows how redistribution of wealth from the high income to the less privileged citizens is positive for the economy. For every extra euro received, low-income individuals reinvest in the economy up to three times more than high income individuals.

There are two strong and frequently repeated oppositional perspectives on UBI: hyperinflation and debt. They tend to go hand in hand, as they are connected to argumentation about the funding of UBI through a general increase in taxes, instead of redistribution of them, or government loans, instead of schemes not requiring increasing national debt. Research in general economics, past economic crises and existing UBI long-term programs show how economic growth doesn't create inflation. European cities are currently experimenting with legislation to control prices, as in the effects of gentrification in rent.

Need for an Updated Social Contract

UBI or not, these futures of labour, the end of labour and forms of social protection will require clear strategies, planning and a strong voice for a new form of civil and labour rights. Trade unions have led other industrial revolutions in the past and should co-lead on strategies for a just transition for those workers affected by technological change (Byhovskaya, 2018).

Transition funds, automation, education schemes, changing working conditions, new occupational tasks and strong social protection systems, whether Universal Basic Income or other, need to be anticipated and deserve immediate policy responses. It is time to stop patching the system and transition to new strategies. How would you like them to look?

Clearly there will always be jobs for humans. And it is similarly clear that we will always have unemployment. The way to balance this might not be through searching for creative ways to keep citizens busy in jobs. The purpose of having a job is not just to have income. It is also meaning and purpose and a place to go every day; letting citizens find their forms of contributing to society, being themselves, spending time with their family and friends, more intensive involvement in communities or the broader world. When people have the freedom to be and do as they want, they will create better cultural, social and economic value.

Conclusion for Education

Job polarisation is accompanying the digital transformation and people need to be prepared for it. But what does a world without middle-skill jobs mean? Education needs to tackle the social debate about the **value of labour in the future** and about the social status of unemployment. In particular the discussion about the universal basic income opens an opportunity for the conversation about different scenarios and their specific social, political, cultural and economic consequences.

The educational response to challenges in computer-mediated work lead in two directions. The empowering and enabling "school" is perceiving learning as a **lifelong** process and treating the individual worker as a potentially able and competent person. It assumes a shared interest of learner and employer and considers the opportunity of personal development. The other perspective is rather utilitarianist, centred around the human resource as a set of agglomerated skills. The learner plays a limited role, competence is not in the focus, and teaching seems aimed at ironing out the most problematic skill gaps. This was always a fight between representatives of employers and the employment side.

From an Education for Democratic Citizenship view, the **ethical aspects and rights must always be involved**. Only someone who knows about their rights and how to factually place them is able to act autonomously, defend themselves against abusive practice, participate actively in discussions about the developments or practice solidarity. Therefore, empowerment is at the core of Education for Democratic Citizenship and Human Rights Education (EDC/HRE).

Most likely, a competency-centred holistic approach of upgrading will succeed in **social partnership** between employers and employment parties, as well as by cooperation between formal-, non-formal and vet learning.

Learning offerings need to be **individualized** – designing individual learning paths, describing and assessing individual competences, to include those acquired outside the workplace, for instance in private life, volunteerism or cultural activities.

Interesting digital tools might be **digital learning accounts** such as the idea of a Digital Skills Personal Learning Account (DSPLA) or other models of competency description, as they were developed in the non-formal education field.

Employees might also be made aware of the value of further training, for instance through more on-the-job programs or by offerings in combination with (temporary) unemployment, like training vouchers offered in phases of short-time-allowances or unemployment.

For a key competency-centred educational strategy, a large potential lies in the volunteerism and **civil engagement in civil society** organizations and initiatives. The activity as such would require increased appreciation for such initiatives and the organizations would also need greater support in order to enable them to align their offerings. Civic engagement could in this perspective also be recognized as a part of upskilling and civil society organizations as partners in outreach strategies.

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