DIGITAL FUTURES OF WORK

WORKING PAPER 10

Human-centric lifelong learning for an era of digital transformation

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July 2023

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Cite the paper as James, D. (2023). Human-centric lifelong learning for an era of digital transformation. *Digital Futures of Work Research Programme, Working Paper 10.*

Digital Futures of Work: Reimagining Jobs, Skills and Education for a Digital Age is an international research programme hosted at Cardiff University and the Institute for Adult Learning, Singapore, with University of Bristol and the Centre on Skills, Knowledge and Organisational Performance (SKOPE) as programme partners.

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Human-centric lifelong learning for an era of digital transformation

David James

Abstract

This working paper begins by outlining examples of where digital innovation in the workplace appears to give rise to new forms of learning, ranging from quite focused and instrumental, to more broadly cultural shifts. We then consider how digital innovation undermines the conventional methods and assumptions around the anticipation of skill needs. Turning to lifelong learning, we argue for the necessity of a plural concept and note how major international articulations have moved over time. A brief consideration of the tensions between schooling systems and lifelong learning policies is then presented. In the final sections of the paper, we set out a theoretical basis for human-centric lifelong learning and then discuss the principles that may give it coherence. We conclude that in the context of continuing digital innovation across most realms of work and life, exploring these questions points us to a system of lifelong learning opportunities that pays as much attention to the needs of citizens as it does to the immediate or anticipated needs of employment.

Keywords: digital innovation | learning at work | capability | human-centric | lifelong learning

1. Digital innovation as an impetus for new forms of learning in work

Our data includes many illustrations of how digital innovation gives rise to a demand for new learning opportunities. Some of these are at the level of the firm. An example is a textiles company in Vietnam whose business strategy represents a conscious break with historic features of that industry in the Vietnamese setting. Key features of this strategy are a deliberate encompassing of more elements of the value chain, including R & D, production management, manufacture, marketing and retail, and investment in digitisation and automation. The scale of this operation and its departure from widespread practices in the textiles industry meant that the company put increasing time and effort into training its workers. For example, the retail end of the business, characterised by step-changes in stock control and the systematic collection and use of customer data, required a range of new knowledge and capacity across its retail workforce. More specifically, within its manufacturing arm, a recent and large-scale transition from manual labour to semi-automation saw a significant reduction in the size of the workforce, but also brought an urgent need for new skills. A senior manager explained that the company had 'recognised the need to invest in its human capital prior to automation' but also acknowledged that in the event, they had little choice in the matter. The nature and sheer scale of the investment and transition meant that the manufacturers and vendors of the new machines also had a strong vested interest in doing

what they could to ensure its success, and these suppliers insisted that workers undergo training that they themselves provided. We heard of similar instances of upskilling being part of a contractual relationship in other major examples of automation.

Other examples of the impact of digital innovation on learning are the product of *relationships* between firms or sectors, and here a more relational or 'ecosystem' perspective can be helpful. An example of this would be in the very divided labour market in South Korea, where large firms with global reach (the *chaebol)* dominate the economic landscape despite accounting for a relatively small proportion of jobs and job creation. In this context, many SMEs are suppliers to the large firms, and their workers earn far less than those going into large firms: one recent study found that they are paid 63% of what the workers at chaebol companies are paid (Council on Foreign Relations, 2018). This substantial wage gap generates and sustains a severe talent gap between chaebols and SMEs (Ishikawa & Vorranikulkij, 2019). A CEO of a successful Information Technology SME spoke of how the large firms were much more able than small firms to invest in digital innovation, and that this was producing 'polarisation' and was 'exacerbating social inequality'. In this context, he said, lifelong learning becomes more important than initial schooling, 'because what matters most is competitiveness at the level of the whole society'. This perspective was reflected in his own provision of opportunities for employees and indeed in his own personal continuous engagement in learning.

Whilst it is not quite as polarised as South Korea, we heard analogous views within our interviews in Vietnam. A similar perspective on the imbalances between large and small firms underpinned the active promotion of learning of various kinds. One SME with around 600 employees in the Electronics sector had recently reduced the size of the workforce through a process of automation. Most recently it had faced new difficulties of recruitment and retention, which the CEO said stemmed from a mismatch between labour supply and the needs of companies like his: whilst the expectations of graduates were 'too high', those of uneducated workers were in a sense 'too low', in that they were just trying to find any job they could. The 'middle level' workers he needed were very difficult to find. He felt that the company had mitigated some of their problems of retention by introducing a 'learning management system', providing attractive learning opportunities and, in some cases, enabling career progression. In one example, the company invited employees to express an interest in learning English. A small number of the applicants were supported for a year, and 'they now speak English very well'. The firm gave these workers small salary increases once they completed the course, partly because their new capacities made them more attractive to other employers and there was a chance that they might leave the firm. The CEO told us about these workers being proud of themselves and their achievements, adding '…and they are still working for me…this means that these workers who graduated the middle school (i.e., they are not university graduates) can make a transition'. He contrasted this to university graduates who would be less likely to stay in the job. This CEO is certain that as the volume and intensity

of automation increases in a context of a rising supply of university graduates, it is necessary to invest in learning alongside and within the job, enabling career progression and building a sense of loyalty and belonging. In the next 20 years he thought this could well 'put non-graduates ahead of graduates' in terms of their general prospects.

We saw an interesting example of the conscious fostering of a culture of learning in a SME in a specialised field of robotics, where the CEO encouraged shared experimentation, learning and product development within a workforce of about 50 people. He explained that whilst most of those he recruited had relevant experience in the fields of mechanical engineering, electronic engineering and computing, his main criteria for selection were that employees should have a willingness to learn and an inclination to try to improve things (both themselves and what they were working on). He also stressed the importance of nurturing a culture in which people felt they belonged and to which they wanted to contribute. This was challenging in an area of high-end technological product development, where some individuals might want to lay claim to an invention because they felt they had made a major contribution. The CEO felt that this aspect was a key one for leadership, where it was imperative that he put effort into helping teams to clarify goals and criteria so that any attributions of origin could be discussed and rewarded in a proportionate and fair manner. He was adamant that staff learning was 'an investment, not a cost', and fundamental to business success as well as to staff retention in a way that could not be achieved through simply paying higher salaries.

There are several other examples across our data where, in an age of digital innovation and more rapid changes to the nature of work, the deliberate fostering of a learning culture at firm level is seen as essential to business success. One is a HR consultancy in Finland, where the CEO described how rich and effective learning opportunities for their own employees were *necessarily* characterised by an absence of workplace hierarchies. This meant that whilst they were in the learning situation, the established senior manager was no more or less important than the young newcomer. This was seen as fundamental for diversity and inclusion but also for creating genuine learning opportunities that were (and were felt to be) genuinely authentic. This strong statement of values and pedagogy was part of a wider company mission promoting learning for individual growth. The CEO described how young people are recruited based on their apparent willingness to learn and grow, and that they are supported to engage in learning opportunities. Many do find positions inside the company, but others would leave and go to work for a competitor: it was particularly interesting that the latter situation was not seen as a problem, but conversely as a positive outcome if it meant that the individual was able to find a role in which they could shine. In practice, it had often resulted in people coming back to the company after several years in other firms.

In several of these examples, there is a clear break with orthodox approaches to rewards and retention, and with the idea of the worker as simply an asset of the firm. Instead, we see a

more expansive valuing of people – as multi-faceted and full of potential, but also as members of society.

2. Skills anticipation in a digital context

Bakhshi et al (2017) remind us of the vast array of policy areas that depend on the availability of labour market information and the significance of this process for individuals, the state and for businesses of all kinds. At the same time, they acknowledge that we cannot be sure we know very much at all about the nature and scale of long-term skills shortages in advanced economies. Evidence is usually derived from surveys of employers, and the most authoritative of these suggest that that 'globally forty per cent of employers have difficulty filling jobs' (Bakhshi et al, 2017: 6).

However, the same study goes on to highlight some of the reasons that we cannot take such survey findings at face value:

> 'The empirical fingerprints for skills shortages are not where we would expect them to be – namely in wage inflation not linked to productivity growth. On the contrary, labour's share in national income has trended downwards in most economies since the 1990s (IMF, 2017). Academic studies…have also failed to uncover significant shortages (Weaver & Osterman, 2017). Where they exist, they are often attributed to the unwillingness of employers of offer attractive remuneration to workers, suggesting that interventions which treat the problem as an educational one, are likely to be poorly targeted (Van Rens, 2015) (Bakhshi et al., 2017: 6)

Bakhshi et al list other limitations of the skills survey approach and its associated assumption that its outcomes can be taken to show shortcomings in education provision and education systems. In a strong resonance with the work of Brown and others on job scarcity (e.g., Brown et al., 2018; Brown, forthcoming) they suggest that it is equally important to look at whether workers have skills that are at a higher level than are currently wanted by employers. In other words, it may be 'skills surpluses and their opportunity costs rather than shortages that pose the greatest challenge for policymakers (Gambin et al., 2016)' (Bahkshi et al, 2017: 6). They also point out that mismatches can occur at any time, not just in the initial transition from education to the labour market.

Our evidence suggests that digital transformation of work, and especially digital disruption, raises further fundamental questions about the validity and utility of employer surveys and their capacity to provide helpful information on skills needs and shortages in a country, region or city. This in turn also makes more problematic the use of the outcomes in decisions about redirecting resources to alter the shape and availability of vocational training and learning opportunities. The time-lag between setting up new opportunities and their completion by

individuals also becomes more significant in a context of more rapid changes to the nature of work.

An interesting empirical illustration of this point emerged in our interviews with leaders and staff in KRIVET, the Korean Research Institute for Vocational Education and Training. KRIVET continues to make use of a regular employer survey, but it was increasingly confronting the limitations of doing so:

> 'The survey cannot pick up everything, so we are also doing regular interviews, and we are kind of gathering some qualitative data, especially from the SMEs. I think that's important because that's where we can also pick up what they really need for the skills development of the employees, for upskilling and reskilling the employees…merging with the big data, with what we have from the quantitative data, is also important' (Senior analyst, KRIVET).

This organisation was also pursuing a further source of information and analysis on the nature of jobs, working with a private big data company that specialises in the identification of trends in the labour market through the examination of very large numbers of job advertisements. This new approach, together with qualitative data and analysis, had raised the organisation's collective awareness of important changes in work-related practices around skills, with implications for the categorisations used by the agency and by policymakers. Staff members identified the process of 'blurring': for example, where once the skills of video editing and production had been located in certain occupations, the availability of high-quality, easy-to-use hardware and software had enabled a rapid growth in the numbers of people posting content on You Tube and on social media, some of which appeared highly accomplished and some of which had serious commercial impact and value.

Although the Bakhshi et al study follows a strong convention of using expert assessments of occupations, it does do this in a novel way and combines it with machine learning, representing a significant methodological development in the field of the anticipation of trends in labour markets. It focuses on the proportions of the workforce who are in occupations that are most likely to experience an increase, or a decrease, in their workforce share. Its main contribution is to highlight the prevalence of uncertainty, and its overarching implication is that there is 'a large mass of the workforce in employment in both the US and UK with highly uncertain demand prospects (that is, a probability of experiencing a higher workforce share of close to 50:50)' (p. 111). The authors note that this analysis is in sharp contrast to Frey and Osborne's much cited work with its conclusion that most workers in the US and UK, depending on sector and type of work, are subject to *either* very high or very low probability of replacement by automation.

Where do such insights lead us in relation to lifelong learning? One view, that we heard several times across very different contexts, is that initial education should be exploratory and

expansive whilst focusing on capacities such as working with others, problem-solving and communicating well. For one interviewee in the US, digital transformation of work and especially the increased presence of generative AI meant that:

> '…this is a good time to pull back from the skills-based education that we've been so emphasizing; to really think, oh, we're going to train people for their first job and really think, okay, with this shifting technology, we have to train our students for a lifetime of working and that means a lifetime of learning and you only can be set up for a lifetime of learning with a good, solid liberal arts education' (US_Ed_CO3).

We heard a similar view from a Pro-Vice Chancellor of a German university, who pointed out that in many fields, a degree course is an expensive investment of time if one is only interested in securing and doing a job, even if a student is not paying fees. If getting a job is the primary consideration, doing a degree is quite a 'horrible deal' for the graduate. This was a separate matter from the strong argument for the availability of a more rounded life-forming experience that includes a thoroughgoing learning to learn, especially in the context of more rapid digital change. As this Pro-VC put it, 'If your goal is to become a responsible human being that's able to navigate this world, understand what's happening and maybe have a long-term perspective, then (a degree) is absolutely the right thing to do, I would say'.

3. Rediscovering a rich concept of lifelong learning

At its simplest, lifelong learning denotes a recognition that initial schooling cannot provide learning opportunities that will serve diverse, complex and ever-changing needs of society. One of our participants in Finland, a professor at a leading university, pointed out that the 'old idea that you go to school and get an education for a specific job' was never the whole story, but has become 'even less valid' in an age of digital innovation. 'Even medical doctors, who have formal requirements (to qualify) …most of the stuff they need they will actually learn in the workplace'. One of the basic findings of the *Digital Futures of Work* research project is that digital innovation gives lifelong learning a new urgency.

As well as appearing deceptively straightforward, the concept of lifelong learning is a very broad one, constantly running the risk of being an 'empty signifier' and coming to mean all things to all people. Certainly, there are many well-defined concepts and practices to be found at both national and international levels and at specific periods. However, to engage meaningfully with lifelong learning we need not only to understand some of these well-defined concepts and practices but also to understand how and why they shift over time.

There have been several international stimuli of note. In the European context, amongst the most regularly cited are UNESCO's *Learning to Be* (Faure et al, 1972) and the European Commission's *Learning: The Treasure Within* (Delors, 1996), the latter being especially well-known for its four 'pillars' (learning to be, learning to do, learning to live together, and learning

to know). Derived from a critical reading of several such documents from UNESCO, OECD and the European Union, Biesta offers an analysis of a major transition in such international declarations over some 50 years:

> 'Whereas in the past lifelong learning was seen as a personal good and as an inherent aspect of democratic life, today lifelong learning is increasingly understood in terms of the formation of human capital and as an investment in economic development. This transformation is not only visible at the level of policy; it also has had a strong impact on the learning opportunities made available to adults, partly through a redefinition of what counts as legitimate or 'useful' learning and partly as a result of the reduction of funding for those forms of learning that are considered not to be of any economic value' (Biesta, 2006 :169)

In the European context, Biesta identifies a key turning point as the European Council's Lisbon Strategy of 2000 and its ambition to make Europe 'the most competitive and dynamic knowledge-based economy in the world' (Van der Pas[i], 2001, cited in Biesta 2006: 171).

Biesta's analysis and more recent work (e.g., James et al, 2022) confirms the continuing utility of Aspin & Chapman's (2001) identification of three persistent purposes or elements in most policy concepts of lifelong learning, namely: lifelong learning for (a) economic progress and development; (b) for personal development; and (c) for social inclusiveness and democratic understanding and activity. While these 'economic', 'personal' and 'democratic' elements can usually be found in national and international policy declarations, a general trend is that the more recent give greatest emphasis to lifelong learning for economic progress and development, signalling it as the primary purpose. 'Economic growth has become *intrinsically valued* in the way that earlier documents positioned the intrinsic valuing of democracy (e.g., Faure et al, 1972) or social inclusion and social cohesion (e.g., OECD, 1997)' (James, 2020. Original emphasis).

Arguably, if learning opportunities are dominated by provision focused on occupation-specific skills, and resources for provision with different starting points is diminished, the motivations for engaging in learning are narrowed. The irony here is that learning opportunities pursued for self-development or community purposes can increase capacity and confidence in work. Biesta asks why people would want to engage in learning if all the key decisions involved (e.g., what, where, how, why) are beyond the individual's control. Whilst of course people will do things when they feel there is no choice (to acquire or hang on to a job, for example), this may reflect little or nothing of their own wishes or ambitions, may not even connect meaningfully to their current strengths and weaknesses, and is likely to be felt as the opposite of a considered decision.

Our previous conceptual work, together with what we see across the data in *Digital Futures of Work*, suggests that lifelong learning is *of necessity* a plural, composite idea, and that

furthermore, it *of necessity* holds together elements that are in some tension with each other. To put the same point differently, if any one of the three elements comes to dominate and diminution or exclusion of the others, we suggest that lifelong learning is no longer the right term to use, and other terms (training for jobs, upskilling, adult education, social education etc.) are likely to be more accurate. This begs the question as to the nature of the 'glue' that holds a concept of lifelong learning together. We return to this point in the final section of this working paper.

4. Acknowledging the tensions with schooling

An understandable but troubling tendency can be for lifelong learning provision to be considered as a separate idea from compulsory schooling, and even separate from academically successful schooling that is then followed by higher education. This is not a tendency that will be obvious from policy documents or mission statements, but it is visible in many practices.

This issue, and its consequences, is considered in earlier work which draws a comparison between the UK and Singapore (James et al, 2022). For several years in the late 1990s and driven primarily by human capital assumptions and the idea of the knowledge economy, lifelong learning was completely central to UK government economic policy, especially that pertaining to England. However, while extensive reforms to schooling were already well underway and motivated by similar assumptions, there was a serious clash of purposes:

> Reforms included an aggressive promotion of school choice and diversity in the name of driving up standards and raising both achievement and productivity. Subsequent assessments of lifelong learning policy point to a clash of purposes: Hargreaves (2004) argued that school-centred policies did not contribute effectively to key purposes of lifelong learning, such as learning how to learn and the development of generic skills; Schuller and Watson's more thoroughgoing assessment pointed to the failure of 'a system which achieves its immediate objectives of raising young people's qualifications, yet leaves them without an appetite to carry on learning'. Additionally, many were leaving school without basic skills or any qualifications and were 'therefore without the foundation for subsequent learning…Having these fundamental competences is arguably more important than achieving a minimum number of subject certificates' (Schuller and Watson 2009:49) (James et al, 2022:1099).

The pressures upon schools to maximise attainments, justified by a 'standards' rationale and by the impact this was expected to have on economic productivity, appears to have undermined the prospects of a major lifelong learning initiative, even though on the face of it the two areas of policy shared similar goals and similar assumptions.

This experience in the UK is compared with Singapore, where there is a strong and contemporary concept of lifelong learning. Tan (2017) suggests the well-established *SkillsFuture* policy programme combines three elements that are very similar to those introduced above. It embodies a 'skills growth model', a 'personal development model' which includes 'individual self-fulfilment in all spheres of life', and a 'social learning model…(which) underlines the role of institutions of trust and cooperation as the means to bring about not just economic progress but also social equity' (Tan 2017:280). Tan's assessment is that although it is 'primarily driven by economic considerations' (:281) this 'triadic' arrangement sustains a broad concept of lifelong learning. Nevertheless, there are challenges that frustrate the successful promotion of lifelong learning in Singapore. Tan lists three, namely: 1. a sociocultural preference for academic rather than vocational education; 2. a lack of a strong culture that underscores not just skills but also the habits of mind needed for lifelong learning; 3. a dominant ideology of pragmatism.

Tan's first challenge resonates with the UK experience outlined above, in that what schools are expected to do by a wide range of interests may be somewhat at odds with the tenets of lifelong learning. A widespread over-valuing of academic qualifications is the corollary of an under-valuing of vocational qualifications and finds an affinity with beliefs that young people must - where they possibly can – make the transition from school to university, thereby giving themselves the best chance of a secure and prosperous future.

This tension – between lifelong learning and established institutional schooling – is acknowledged in the Singapore Government's earlier *Report of the Committee on the Future Economy* (Singapore Government 2017) which addressed responses to the fourth industrial revolution, and arguably it remains an issue for the *Smart Nation* initiative on the pervasive adoption of digital and smart technologies (Singapore Government 2021a; 2021b). The 2017 report:

> '(D)iscusses trying to reduce the expectation upon students always 'to seek the highest possible academic attainment as young as possible' and how they might be encouraged instead 'to learn and acquire new skills throughout their lives' (Gleason 2018:154) (James et al., 2022:1100).

Our fieldwork in South Korea illustrates a particularly strong example of seeking 'the highest possible academic attainment as young as possible', and a clear affinity between a bifurcated labour market and intensive competition for certain high schools and then the most prestigious ('Sky') universities, which in turn appear to provide the only real chance of secure and well-rewarded employment in the *chaebol* sector. This arrangement produces an over-supply of graduates and many negative consequences that follow for those individuals themselves and for some non-graduates too (Brown & James, 2020) though it may suit the immediate needs of firms in an elite segment of the economy. However, a further difficulty is that the current shape of lifelong learning in South Korea is not well placed to assist: while

there are exceptions, the vast majority of state-sponsored lifelong learning provision in South Korea is non-formal, community-based and often 'recreational', at least in its core purposes.

5. A theoretical basis for human-centric lifelong learning

As many have observed, the concepts of human capital that have come to dominate much thinking about the purposes of education have many negative consequences (see for example Brown et al., 2020; MacKenzie & Chiang, 2023). Our analysis suggests that the concept of human capital, at least in its mainstream form, is unhelpful if we want to answer the question 'what sort of lifelong learning do we need in an age of rapid digital transformation'? We need, in other words, to consider the weaknesses of human capital and either augment it or replace it with something better.

The work of the economist and philosopher Amartya Sen is particularly helpful, because it emphasises 'the significance of humanity in economics, a significance that has been underestimated in this field' (Saito, 2003: 17). Well-being is therefore a central concern. Two key ideas here are 'functionings', and 'capabilities'. 'Functionings' are achievements, usually different aspects of living conditions, whilst 'capability'

> 'refers to the alternative combinations of functionings from which a person can choose. Thus, the notion of capability is essentially one of freedom – the range of options a person has in deciding what kind of life to lead' (Drèze & Sen, 1995:10).

Sen's approach has Aristotlean roots, and arguably provides a framework for conceptualising well-being that is superior to the main traditional approaches to well-being, namely the commodity/income approach and the utility approach (Saito, 2003). Sen's primary focus is on what is of intrinsic value to people rather than on what people could buy with their income. Having said that, he does not reject or underestimate the importance of income, insisting that raised income can enhance capabilities but also that enhanced capabilities can lead to raised income. The point is rather that it is inappropriate to use income (whether at individual or national level) as a sole or main proxy for well-being. By contrast,

> 'Capabilities comprise what a person is able to do or be: "the ability to be well nourished, to avoid escapable morbidity, to read, write and communicate, to take part in the life of the community, to appear in public without shame" (Sen, 1990: 6)' (Saito, 2003: 19).

Sen's thinking prompts a rediscovery (or reminder) of how the richness and breadth of a long history of thinking about the purposes of learning and education has, in more recent times, often been ignored. The reductionism of seeing education as simply an investment in human capital is challenged: for Sen, how we think of education cannot be reduced to instrumental values but involves *both* instrumental and intrinsic values. This relates closely to the distinction he makes between human capital and human capability: where the first 'tends to

concentrate on the agency of human beings in augmenting production possibilities', the latter 'focuses on the ability – the substantive freedom – of people to lead the lives they have reason to value and to enhance the real choices they have' (Sen, 1993: 293). Later work further clarifies that Sen sees human capability as a larger, different order category to human capital: human capabilities have, firstly, a 'direct relevance to the well-being and freedom of people', secondly an 'indirect role through influencing social change', and thirdly an 'indirect role through influencing economic production' (Sen, 1999, cited in Saito, 2003: 24).

The perspective has been very influential in some areas. It was a fundamental underpinning for the United Nations Development Program's *Human Development Index* launched in 1990, and together with the work of Nussbaum, has been taken up by adult educators in various continents. However, our immediate concern is with what it suggests for systems of lifelong learning in conditions of digital transformation.

The concept of capability is fundamental to how Brown et al (2020) conceptualise the limitations of orthodox notions of human capital and then how they spell out the need for an augmented, or 'new' human capital. Such a new human capital:

> '…rejects the idea of humans as capital because people can't be reduced to what they earn from learning or from the stock of their knowledge. It recognizes differences in how people understand, utilize, and seek to make a life from their knowledge and skills' (:4)

Brown et al argue that in a context of job scarcity rather than labour scarcity, as investing in education becomes increasingly expensive to individuals but also more uncertain in outcome, seeing education as a private good is fundamentally flawed. They point to predictions about the increasing prevalence of machine intelligence and the many impacts this will have on those already working as well as those yet to join the labour force:

> '…as we move into a new era, we need people to have the capabilities to deal with an increasingly complex world, not only in terms of getting a job. Given the rise of authoritarian populism, other aims, such as an education for democracy, should also be considered. From this standpoint, state(s) should invest in education, including higher and vocational education, making it low cost if not free and widely available' (:4)

There is a strong connection here with Nussbaum's argument for supporting all people with the achievement of a 'threshold' level of capability (e.g., Nussbaum, 2006). Nussbaum is interested in the extent to which the education system enables everyone, despite their many differences, to live a successful adult life. In her view this cannot be reduced to 'coercive functioning' measured by a narrow range of competences.

These considerations lead Brown et al to offer:

> '…a different account of labor supply and the role of education in a context of rapid technological advance. Technical skills are already subject to rapid obsolescence, and many of the tasks defining middle-class occupations are being disrupted by digital innovation and automation. People will need to develop the wherewithal to change jobs throughout their careers, to reinvent themselves occupationally and socially by creating a meaningful life no longer structured by full-time, regular employment. Such a view challenges today's high-stakes education systems that stifles innovation. We can no longer think of the purpose of education as being limited to what is required to earn a living rather than as a more widely conceived contribution to the quality of individual and social life' (Brown et al., 2020:5)

Our data supports this analysis. The 'wherewithal to change jobs' or to 'reinvent… occupationally and socially' cannot be derived from attempts to predict future skills needs and then set up substantial training opportunities so that workers and the economy will be 'ready'. A more rational response to the increasing uncertainty is to focus on skills and capacities that underpin interaction, flexibility and resilience, that is, a multi-sided and human-centric response.

6. Towards a human-centric lifelong learning for the digital age

A joint view from the *Digital Futures of Work* project, based on both our conceptual work and fieldwork, is that digital transformations of work (and indeed of many aspects of life in general) are not only extensive, pervasive, and rapid: they also expose a series of limitations in existing and well-established policies, institutions and practices in initial schooling, post-compulsory education and training, and lifelong learning.

One policy response to anticipated digital disruption, visible in some governmental reports in the UK (e.g., House of Commons Select Committee on Science and Technology, 2016), is to insist that new efforts are brought to bear on upskilling and re-skilling in the general area of digital skills. This appears to be a reasonable response, though in this particular example, the nature of the skills is not specified, and could mean anything, from training large numbers of software engineers or AI specialists, to making the learning of coding a compulsory part of the secondary school curriculum. There is also the danger here of misalignment with needs, rather in the way that at one time, people attending the earliest training courses for word-processing found they were expected to learn about computer programming.

Whilst it is too early to declare it a success, a different policy response can be seen in Finland. We saw an example of a 'Continuous Learning Unit' attached to a large university where staff design, broker and project-manage opportunities for individuals or groups, enabling access to courses that can range from 1-day to segments to a four-year undergraduate degree programme. Some elements are tailor-made, whilst many draw on portions of what is already

up and running. Some of the learning made available in this way can be used as credit towards qualifications. The staff leading the Unit reported great benefits, to all parties, when (mainly young) undergraduates were alongside (mainly older) adult learners with work experience. However, they also admitted that there were sometimes great difficulties in setting up the provision, not least that academic staff sometimes objected to the arrangements because their workloads were already full (one staff member described this as a 'constant battlefield').

One of the Unit's main programmes responds to a national initiative with a sustainable development theme focused on unemployed people (many of whom are university graduates), where employment in the circular economy is the goal. The Ministry of Education and Culture in Finland had recently established a new agency with a national remit to promote continuing learning, through which funding is available. The Unit's staff praised the way in which this new national Centre operates, i.e., allowing bottom-up initiatives to be proposed and funded.

However, whilst the new national Centre can be understood as a rational response to greater uncertainty, it is by no means universally welcomed:

> 'They (the government) consulted very widely…pretty much everybody was against it, yet still they went on with it…Personally I am very frustrated, because I think that (the Centre) affects the ability of higher education to develop continuous learning towards something that would be really valuable in the future' (Head of Continuous Learning Strategy in a university).

This same interviewee went on to share their view that the national Centre did not have a sufficiently clear mission because it was driven by two different philosophies, one from the 'traditional' Ministry of Education and the other from the more 'innovative' Ministry of Labour. They also reflected on an experience of involvement in the 'Digi 2030' initiative, which is aimed at realising a 'digitised higher education'. Here too, they felt that the focus had become setting out courses for the future, rather than a hoped-for learner-oriented discussion that would also involve employers and workplaces. Their conclusion was that universities in Finland had a great distance to travel before they would be ready to respond in a more innovative manner to a rapidly changing world.

The point above may come as a surprise to those who feel that Finland is 'ahead of the game' in the realm of lifelong (continuing) learning. As another interviewee, working in digital infrastructure and services in a university put it:

> 'I would not say that Finland is really far ahead because in general higher education institutions are still quite bureaucratic and administrative, and to really open them up is a challenge'.

As we have seen, the nature and speed of digital innovation means that a response rooted in the question 'which skills are now in short supply and how can they be provided quickly' – is at best a partial and inadequate response. We would agree with Peters' view that many policy responses to technological change are rather conservative:

> 'Education is seen a social sponge and lifelong learning is seen as a 'solution' to the need for perpetual retraining in new skills. The emphasis seems to fall on mopping up the unemployed, creating work, rather than focusing on a sustainable future society that can protect its citizens' (Peters 2020:486).

Our analysis suggests that a more radical re-think is warranted. To this end, as part of the *Digital Futures of Work* project we have proposed a 'progressive concept of lifelong learning' which could offer the sort of human-centric response required. This can be expressed in the following nine 'principles of procedure'.

'A progressive concept of LLL would:

1. Begin from, encapsulate and promulgate a coherent view of the person/citizen and the person/citizen's entitlement to learning opportunities, including their right to ethically sound learning opportunities and to privacy.
2. Maintain breadth in its view of the learning process and its view of the range of purposes and beneficiaries of learning activity. This would acknowledge that whilst many worthwhile learning activities are directly work- and job-oriented, many others do not have an obvious or immediate connection to the workplace or are undertaken before such a connection can be seen.
3. Direct resources to provision that responds to known and emergent employer needs for upskilling whilst also engaging in constant horizon-scanning for emergent jobs and skills, and new forms of economic activity, responding early and experimentally to these including 'bottom up' approaches to economic and social innovation.
4. Direct resources to provision that responds to known and emergent societal, community and environmental needs, such as areas of the green economy.
5. Provide opportitunities which support individual agility and transitions as a right in a time of inevitable rapid technological change, whilst recognising that greater agility may itself reduce opportunities for some forms of workplace learning.
6. Pay particular attention to building creative and other capacities of the sort that machines are not good at, thereby contributing to the maintenance of human dignity and self-worth amongst citizens.
7. Foster the creation and promote the use of new tools for learning, which themselves often incorporate advanced AI, whilst maintaining ethical standards (e.g., preventing the unethical use of learning-related data in career progression).
8. Ensure the wide and continuing availability of opportunities for citizens to engage in learning that builds critical understanding of recent and contemporary technological

developments and their effects - positive and negative – on lives, livelihoods, prospects and well-being.

9. Have prominence as a fundamental and assessed part of the school curriculum, such that an understanding of and preparedness for LLL is a core, regular and expected feature of schooling for all citizens' (James et al., 2022: 1106-07).

Of course, these 'principles of procedure' beg many further questions and lead to many further choices about operationalisation. They do however embody insights from our data and analysis, and they recognise the pluralistic nature of lifelong learning (cf. James 2020) in that they incorporate the three dimensions described earlier (economic participation, personal development, democratic participation). As we saw earlier, these dimensions are in some tension, but this is not a reason to let any one of them dominate. Rather than resolving the tensions, we might instead:

> '…recognise them for what they are, as fault-lines running through any society that seeks to find accommodations between capitalist relations of production, elements of democratic governance, concern for social cohesion, health, the quality of life and ecological sustainability' (James et al., 2022:1107).

How might a system of lifelong learning attend to all three? It could simply mean making sure that examples of all three are constantly available in various forms, but a more subtle model would be one whereby any learning opportunity *embodies* as much as possible of all three dimensions. For example, a focused training on skills for a specific task in a workplace could trigger access to a second, more expansive learning opportunity focused on the wider process in which the tasks sit, or on self-development, or on community activity, that the individual is able to choose from a wide range of options and perhaps from amongst alternative modes of engagement. Or again, episodes of community-based learning might grow to incorporate offering some service or advice to others, commercially or voluntarily (or based on some form of barter)[ii]. These are partly matters of principle, but it is worth noting that they are entirely in keeping with contemporary research-guided thinking on teaching, learning and assessment, such as advocated by the project *Developing Future-Oriented Pedagogical Practices for the TAE Sector* (See Bound et al., 2020; 2022; 2023).

7. Conclusion

In the context of continuing digital innovation across most realms of work and life, exploring the questions in this working paper points us to a system of lifelong learning opportunities that pays as much attention to the needs of citizens as it does to the immediate or predicted needs of employment. The term 'system' here is not meant to imply something that is entirely centrally organised or provided, or uniform in what it delivers, but rather an array of opportunities underpinned by coherent principles. Whilst the opportunities will vary (in

mode, cost, location, intensity, responsibility etc.), they can be sufficiently coordinated to support and realise a purpose. From a policy viewpoint, the issue is then not simply 'what should we provide', but perhaps 'what can we provide, incentivise or encourage, and what key principles give this assembly of opportunities its coherence'?

A major principle that could be added to the list of nine set out above is that a human-centric lifelong learning offer must respond to uncertainty. The work of Bahkshi et al (2017) discussed earlier can be taken to suggest that a major task for most (if not all) lifelong learning opportunities is to provide a supportive environment as a response to increases in *uncertainty*. This is not at all the same as using predictions about 'robots taking jobs' to frighten people. Instead, it is of necessity a more subtle process of support, assisting with the broadening of horizons, the nurturing of interests, the development of knowledge about digital developments, and the building of capacities to enable individual flexibilty (perhaps 'agility').

Finally, it is worth noting that whilst a human-centric lifelong learning system represents a paradigm shift, a radical departure from most existing practices and a response to unprecedented changes, nevertheless the *tools* and most of the *ideas* that it harnesses have been around for a long time.

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[i] Van de Pas was Director-General, European Commission Directorate for Education and Culture.

[ii] We learnt of interesting examples of this in South Korea. One was where community-focused learning opportunities included an App-based skills exchange, rather like a 'dating app', where people could exchange practical skills or knowledge. Another was a course attended by mothers (described as 'housewives') which provided them with an opportunity to become product reviewers on a social media platform and receive specific training for that task.