FOURTH TREND REPORT

Think Tank TRANSIT

Future skills and the future of adult learning

HELEN BUCHS

JUNE 2025

SVEB FSEA
Schweizerischer Verband für Weiterbildung
Fédération suisse pour la formation continue
Federazione svizzera per la formazione continua
Swiss Federation for Adult Learning

Inhaltsverzeichnis

Summary

The fourth trend report from the Think Tank TRANSIT is dedicated to the topic of future skills and their significance for the future of adult learning. The aim is to provide adult learning stakeholders with ideas on how to address the topic of future skills and what role they can play in shaping the future.

First, the term 'future skills' is defined in theoretical terms. Future skills are defined as competences, attitudes, values and knowledge that will be important in the future. Various competence frameworks are presented, and their focus areas are highlighted. A key finding is that future skills should not be viewed in isolation as a means of individual employability, but also as a contribution to collective social transformation. In the tension between individual responsibility and structural challenges, it becomes clear that adult learning must not be limited to adaptation but must open up spaces for participative creation. It is also emphasised that future skills cannot be understood as static lists, and that there are no universally valid future skills, but only those that appear useful in specific contexts and within certain visions of the future.

The report derives implications for adult learning practice from these findings. The future is understood as an open space of possibilities that can be shaped through education. Adult learning should therefore not be geared towards uniform goals or skills, but should promote openness, dialogue and reflection. Central to this is the recognition of pluralistic visions of the future. Not all areas of society are changing at the same pace or in the same direction, which is why future skills must always be considered in a context-sensitive manner. The report also points out that adult learning should be understood as an ethically responsible space for shaping the future. To this end, it is important to critically question competence frameworks and the dominant discourses on which they are based, to reveal institutional power relations and to develop alternative visions of the future. Practical tools such as card sets, Futures Literacy methods and megatrend mapping are presented as supporting tools that enable active engagement with the future and with competences.

The concluding chapter formulates three overarching perspectives that can be understood as guidelines for the further development of adult learning: meaningfulness, variety and diversity, and complexity. The perspective of meaningfulness emphasises that adult learning for future skills is not primarily about adapting to change and self-optimisation, but rather about inspiring a meaningful contribution to social change. The diversity perspective requires adult learning to embrace different visions of the future and realities of life and to use them as a resource. Future skills must be adaptable to different contexts and cannot be reduced to universal standards. Finally, the complexity perspective recognises that the future is neither linear nor clear-cut. Adult

learning should therefore create spaces in which ambiguities can be addressed, assumptions questioned and new ways of thinking explored. These three perspectives open up opportunities for adult learning such that it not only adapts to existing structures but also plays a formative role.

1. Introduction

The future will bring many changes, due, for example, to developments in the labour market, advancing digitalisation, climate change and demographic change. These developments are linked to transformation processes that harbour both risks and opportunities. There is broad consensus that adult learning can not only help to respond to developments, but also to harness and shape the opportunities and potential of social change.

Various approaches which can be summarised under the heading of future skills address the question of what skills, attitudes, abilities and knowledge are required to master these transformation processes. These not only provide guidance for acquiring future-relevant skills, but also a framework for thinking about the future and reflecting on possible developments in a forward-looking manner. Future skills thus also refer to empowerment for independent and responsible action in a changing world as being a central task of adult learning.

The Think Tank TRANSIT has adopted the topic of future skills as a focus area for its work in 2024 and 2025. This was based on things such as an exploratory survey distributed via the TRANSIT newsletter. In this trend report, TRANSIT explores how we can identify which skills may be relevant in the future and how adult learning can deal with uncertain, complex and diverse visions of the future.

The trend report is divided into three parts. The first part is dedicated to a critical examination of the concept of future skills and its significance for adult learning. Its aim is to create a solid, academically based foundation for placing the topic of future skills in a social and educational policy context. Leading on from this, the second part highlights implications for adult learning, showing what future skills could mean for this field. In the third part, the trend report provides some stimulating ideas for the future of adult learning. It takes up the perspectives of meaningfulness, variety and diversity, and complexity, as previously outlined by TRANSIT, and examines them from the perspective of future skills.

The contents of this trend report are the result of almost two years of work by the Think Tank on the topic of future skills. As TRANSIT sees itself as a space for free thinking that fosters a collaborative and interdisciplinary approach, the contents were not developed in isolation

behind closed doors, but through various forms of exchange. These include events, bilateral discussions and feedback on the draft of this report. This approach is also linked to the hope that the content generated will not only be theoretically stimulating but will also provide practical tools. We would like to thank everyone involved for their valuable contributions.[1]

The Think Tank TRANSIT (http://www.thinktank-transit.ch/en) is a project of the Swiss Federation for Adult Learning (SVEB) and is supported by the State Secretariat for Education, Research and Innovation (SERI).

2. Background and theoretical considerations: What are future skills?

The discussion about future skills revolves around the question of which skills are required for the future and how these can be defined. This chapter aims to shed light on the theoretical background. First of all, we will define what is meant by the term and which competence frameworks exist. Then we will examine the extent to which common key skills can be identified across different competence frameworks; thereafter we will analyse which normative foundations and associated ideas for the future underlie the competence frameworks. Using theoretical approaches and empirical evidence, this chapter also shows how academic works can be used to question future skills and think along alternative lines. Finally, the question is raised as to how alternative visions of the future can be developed.

2.1. Definitions

In many definitions, future skills refer to competences, attitudes, values and knowledge that are becoming increasingly important in a changing society and world of work in order to be successful in the future. Future skills are considered crucial to achieving professional success, developing innovative solutions and contributing to a sustainable society. This also includes gaining an awareness of local and global challenges. Ehlers (2020, p.7-8) defines future skills as competences that enable people to solve complex problems and act (successfully) in a self-organised manner in emerging action contexts.

These definitions are based on the idea that education systems of the present, including adult learning, cannot meet all the requirements of the society of the future as the future will bring new developments and thus change the requirements. Discourses on future skills are therefore usually an attempt to anticipate future requirements in order to be able to react to new needs or conditions as early as possible.

1 Special thanks go to Hana Ditetova, Urs Blum, Valentina Röschli, Brigitte Bosche and Irena Sgier.

However, the term ‘future skills’ is not used consistently. Rather, it is a reference point to which various players refer when they try to describe which skills could be important in the future. In addition to the term ‘future skills’, there are various other terms, some of which are not clearly defined and have been in use for some time, such as ‘key skills’, ‘core skills’, ‘transversal skills’, ‘21st century skills’ or ‘future competences’.

This list of terms also shows that the term ‘future skills’, which has been increasingly used in recent years, is not a fundamentally new idea. This means that, when discussing future challenges and the skills required to meet them, the focus should not be narrowed down to concepts known as ‘future skills’. In this report, however, we use the term ‘future skills’ in most cases for ease of reading.

In general, it can be stated that future skills are a type of specific profiling within existing competence concepts that can be categorised by their degree of abstraction. Competences with the broadest definitions are those used as generic terms for knowledge, skills and attitudes for coping with action requirements. Within this general sphere there are more specific categories such as key competences or interdisciplinary competences, which refer to competences that are relevant in different contexts and areas of life, regardless of specific subject areas. Future skills usually represent a further focus that tailors these interdisciplinary competences to the requirements of the future. However, future skills are sometimes also understood to mean specific professional skills that will become increasingly important in certain areas, such as data analysis.

In this context, there is also increasing discussion as to what added value is provided by broad, generalist skills profiles compared to highly specialised skills. David Epstein, for instance, argues in his book “Range: Why Generalists Triumph in a Specialized World” (Epstein, 2020) that people with diverse skills and experience are better able to respond to complex challenges because they are more flexible, willing to learn and adaptable in changing contexts. This contrasts with the observation that small and medium-sized enterprises in particular often prefer adult learning programmes that contribute directly to effectiveness in their core business and that they often pay little attention to interdisciplinary skills (Dernbach & Schüepp, 2019). However, most research articles on this subject emphasise that it is less a question of focusing on either interdisciplinary or subject-specific skills, but rather of their productive combination (Stops et al., 2022). Future skills should therefore not be seen as a counter-model to specialisation but as a supplement that supports transfer, reflection and long-term development capability.

There also needs to be clarification as to which sector of societies future skills relate to. Future skills are frequently discussed in terms of employability in a changing world of work. Increasingly, however, future skills also encompass other social dimensions, for example with regard

to the climate crisis, social inequalities or safeguarding democratic processes. This paper is based on a broad understanding of future skills that relates not only to the labour market, but also to ecological, social and societal transformation processes.

2.2. Future skills frameworks

The discussion about future skills is based on certain assumptions about which skills will be important in a changing world. In order to better understand and critically question these assumptions, it is worth analysing various competence frameworks because they structure and bundle together different perspectives on future skills.

A large number of such competence frameworks have been developed. This report will take a brief look at some of these frameworks by way of example in order to provide an overview of their main features. The description is limited to a few competence frameworks with greater impact. The selection has also attempted to cover as wide a range of different focal points as possible. After discussing the individual competence frameworks, this report will focus on their similarities and differences.

The following table does not include concepts from educational research, which also deal with future-orientated skills, but generally not under the term 'future skills'. The paper by Scharnhorst and Kaiser (2018) provides a good overview of transversal competences, which could become increasingly important in the Swiss educational landscape from an educational policy perspective.

FRAMEWORK	TARGETS	FUTURE SKILLS	BENEFITS	CRITICISMS
DeSeCo (OECD) https://www.oecd.org/en/about/projects/future-of-education-and-skills-2030.html	– Key competences contribute to valuable outcomes for society and individuals under a variety of circumstances – Focus on social and emotional competences, as well as global responsibility	3 main categories: – Ability to use and adapt media, aids and tools – Intercultural and so cial interaction – Acting autonomously	– Connection to PISA and ALL (Rychen & Salganik, 2003) – Stimuli for educational reforms in primary schools, as well as in adult education	– Very broadly defined – Few specific instructions for action
Key competences for lifelong learning (EU) https://joint-research-centre.ec.europa.eu/scientific-activities-z/education-and-training/key-competences-lifelong-learning_en?	– Determination of essential skills for training, work and social participation – Basis for specialised competence frame works (DigComp, GreenComp, LifeComp and EntreComp)	8 key competences: – Literacy – Multilingualism – Mathematical competence and competence in science, technology and information technology – Social, personal and learning competence – Civic competence – Cultural awareness and cultural expression – Entrepreneurial competence – Digital competences	– Practical – Comprehensive – Highlights the role of basic competences in future skills – Card set available	– Little systematic link between the frameworks

DigComp (EU JRC) https://joint-research-centre.ec.europa.eu/scientific-activities-z/education-and-training/digital-transformation-education/digital-competence-framework-citizens-digcomp_en	– Promoting the skills needed for an increasingly digital world (Vuorikari et al., 2022) – Complementary DigCompOrg framework promotes self-reflection and self-assessment within educational organisations	5 main categories: – Information and data literacy – Communication and collaboration – Creation of digital content – Security skills – Problem solving	– Broad thematic scope – Politically anchored – Specific descriptors – Accompanying materials available	– Frameworks exist side by side – Little coherence between subject areas
GreenComp (EU JRC) https://joint-research-centre.ec.europa.eu/greencomp-european-sustainability-competence-framework_en	– Promoting skills and attitudes required to tackle the climate crisis and ecological challenges and to promote sustainable lifestyles (Bianchi et al., 2022)	4 main areas: – Sustainability-orientated thinking – Values and attitudes for sustainability – Capacity for action for sustainability – Collaboration for sustainability		
LifeComp (EU JRC) https://publications.jrc.ec.europa.eu/repository/handle/JRC120911	– Promoting skills for a successful, sustainable and fulfilling life – Promoting social integration and well-being (Sala et al., 2020)	3 main areas: – Personal development – Social skills – Learning skills		
EntreComp (EU JRC) https://joint-research-centre.ec.europa.eu/entrecomp-entrepreneurship-competence-framework_en	– Promoting the development of entrepreneurial thinking and action – Embedding entrepreneurial competence as a general ability for creative problem solving, initiative and value creation in various social contexts	3 main areas: – Ideas and opportunities (e.g. recognising opportunities, sustainable thinking, creativity) – Resources (e.g. personal responsibility, motivation, financial and risk management) – Action (e.g. initiative, adaptability, cooperation)		
Reference Framework of Competences for Democratic Culture (Council of Europe) https://rm.coe.int/16806ccc07	– Promotion of competences deemed necessary to participate constructively in democratic processes, deal with diversity and resolve conflicts peacefully (Barrett, 2016)	4 main areas: – Values (e.g. respect for human dignity and human rights) – Attitudes (e.g. focus on the common good) – Skills (independent learning skills) – Knowledge and critical thinking (e.g. knowledge and critical evaluation of language and communication)	– Strong values – Practical materials for educational institutions such as accompanying materials, illustrations and tools (e.g. descriptors, curriculum guidelines)	– Narrow focus
Partnership for 21st Century Skills (from which the 4K model is also derived) (non-commercial initiative supported by many companies and organisations) https://www.battelleforkids.org/networks/p21/frameworks-resources	– Promotion of skills, knowledge and expertise that adults should have in order to succeed at work and in life	4K model: – Communication – Collaboration – Creativity – Critical thinking	– Widely used and well-known – Provides a basis for new learning approaches, such as interdisciplinary teaching – 4K model suitable as an introduction to discussions on future skills due to its simplicity	– Sustainability, ethical responsibility and social transformation not systematically integrated

World Economic Forum https://www.weforum.org/publications/the-future-of-jobs-report-2025/	– Identifying the skills that will be important in the world of work over the next five years (WEF, 2023) – Highlighting how macro trends will affect jobs and qualifications	Combination of cognitive, technological and social skills: – Analytical thinking – Creativity – Resilience – Flexibility – Motivation and self-confidence – Curiosity and lifelong learning – Reliability – Technological competence – Emotional intelligence – Collaboration	– Suitable for companies and professional development – Empirically backed by global surveys	– Focus on economic needs and interests – Social and ethical dimensions underrepresented
future-skills.net (Stifterverband und McKinsey) http://future-skills.net/	– Promotion of cross-sector skills, abilities and attributes that will become more important in all areas of professional and personal life over the next five years	3 levels: – Individual future skills, such as self-organisation, critical thinking and learning ability – Technological future skills, such as digital sovereignty, data literacy or AI skills – Transformational future skills such as innovation, entrepreneurial thinking and change management	– Applicable in higher education – Differentiated according to skill levels – Supported by multiple publications (e.g. Suessenbach et al., 2021)	– Social and ethical dimensions underrepresented. – Primarily geared towards the German education landscape
Next Skills / Triple-Helix-Modell (Ehlers) https://nextskills.org/en/	– Promoting learning for the future at universities – Establishment of the triple helix model for action in emerging contexts, with an emphasis on self-organisation as a principle for universities of the future	3 main categories: – Individual organisation-related future skills (e.g. communication skills, cooperation skills, etc.) – Individual object-related future skills (e.g. innovation skills, digital skills, etc.) – Individual development-related future skills (e.g. learning skills, self-competence, etc.)	– Systematically modelled – Suitable for higher education development – Card set on future skills	– Narrow focus on higher education – Difficult to transfer to vocational education
Agenda 2030 / BNE (UNESCO) https://sdgs.un.org/goals	– 17 Sustainable Development Goals (SDGs) as guidelines for tackling social, economic- and environmental challenges by 2030 – Promotion of education for sustainable development (ESD)	4 main categories: – Systemic thinking and sustainability-orientated problem solving – Critical reflection and value orientation – Capacity to act and innovate for sustain ability, plus global responsibility – Intercultural collaboration	– Globally rooted and widely used – Long-term horizon – Suitable as a guide for social transformation in various contexts (education, economy and politics)	– Implementation dependent on political prioritisation and funding

Table 1: Overview of future skills frameworks

2.3. Important competences across future skills frameworks

Due to the large number of future skills frameworks, the question arises as to whether there is fundamental agreement between them on the most important future skills and whether a meta-perspective can be developed from them. There are a number of challenges when creating an overarching synthesis. One major obstacle can be found in the basic notion of future skills themselves. As the future is always uncertain and cannot be predicted exactly, future skills should be as widely applicable as possible. They must therefore be defined openly and flexibly in order to remain relevant in different future scenarios. A standardised competence grid would limit the necessary flexibility. Also significant are the differences in the focus of competence frameworks, their degree of abstraction and the model assumptions, as well as the lack of reference between the frameworks.

Nevertheless, some authors have attempted to create meaningful aggregations using the future skills frameworks. Voogt & Roblin (2012) have analysed eight frameworks. As a minimum, the results indicate a broad consensus on what future skills actually are. Pellegrino and Hilton (2013) have classified the skills into three categories: cognitive skills, intrapersonal skills, interpersonal skills. Ehlers (2020, 2022) has developed his own regulatory framework for future skills by comparing them systematically (see above). Lamb, Maire & Doecke (2017) note that the following future skills have received particular attention from researchers, policy makers and practitioners: critical thinking, creativity, meta-cognition, problem-solving, collaboration, motivation, self-efficacy, conscientiousness and persistence. After analysing numerous studies and with reference to transversal skills, Scharnhorst & Kaiser (2018) come to the conclusion that the following skills will gain in importance in the future: complex problem-solving, IT skills, social and self-competences as well as basic skills.

2.4. Normative foundations

The discussion about future skills is inextricably linked to normative ideas about what education should achieve in a changing society and which visions of the future are used to justify these objectives. On the one hand, this raises the question of whether future skills should primarily be geared towards individual competitiveness or social transformation. On the other hand, it is necessary to discuss which implicit ideas about the future are contained in the competence frameworks and what consequences they have for the design of education and training and adult learning.

2.4.1. Individual competitiveness or social transformation

As shown by the description of the various skills frameworks, future skills are often geared towards promoting individual competences. However, they also often have social transformation in mind. There are clear differences between the competence frameworks in terms of

whether they focus more on the former or the latter. Both approaches also address a dilemma that the adult learning sector has been grappling with for a long time. This concerns the ambivalent balance between the individualisation of social problems and the support of people in social change processes (Kraus, 2022).

Those future skills frameworks that focus primarily on enabling individuals to remain competitive in a changing (working) world by acquiring future skills tend to be based on an understanding of education that considers personal responsibility to be central and sees education as an individual investment in human capital and an adaptation to market requirements. The goal is, for instance, to maintain employability by adapting to the changing skills requirements resulting from technological progress.

Although these goals are of great importance for individuals and the economy, education is reduced to economic usability and social functionality while social and system-related dimensions are neglected (Biesta, 2013; Kraus, 2022). Obstacles to the acquisition of skills such as educational inequality, precarious working conditions or a lack of social security are ignored, for example.

Furthermore, this focus promotes an understanding in which the development of future skills is seen more as a means to an individual competitive advantage. However, it seems at least questionable whether a competition-orientated approach is more suitable for tackling future societal problems than, for example, cooperation and solidarity. It should also be noted that changes in the world of work and the development of skills cannot be viewed in isolation. They are always connected with individual life situations, available resources and personal values and interests.

Future skills frameworks, on the other hand, which are at the other end of the scale, i.e. which pursue social transformation in particular, assume that the promotion of individual skills contributes to solving social challenges. After all, collective phenomena such as climate protection or democratic participation can ultimately be traced back to the actions and decisions of individuals (Kraus, 2022). The skills and attitudes of individuals must therefore be strengthened first. Adult learning therefore has the task of dealing with societal development tasks at an individual level. “Sie trägt damit einerseits dazu bei, eine Weiterentwicklung der Gesellschaft zu ermöglichen, und stärkt andererseits die individuelle Handlungs- und Gestaltungsfähigkeit im Kontext dieser Veränderungen ” (“On the one hand, it contributes to the further development of society and, on the other hand, it strengthens the individual’s ability to act and their formative capacity in the context of these changes” Kraus, 2022). Or, as Strzelewicz (1984, p. 51) puts it, social crises cannot be overcome through individual learning, “aber doch auch nicht ohne dieses Element“ (“but not without this element either”).

Adult learning as a contribution to the democratic, societal or ecological reorientation of collective living conditions and not just as an individual development goal is at the heart of transformative learning. Learning is understood as a process of coming to terms with societal power relations, normative role models and alternative visions of the future (see https://thinktank-transit.ch/en/dialogue/one-of-my-fears-is-that-adults-stop-learning-deeper-issues/). Empirical examples and theoretical foundations of such an understanding are provided by the FutureLabAE project, for example, which shows how transformative learning uses dialogical processes, participatory approaches and critical reflection to open up scope for social action and contribute to active participation (Manninen, et al., 2020). However, a transformative approach assigns not only an enabling but also an educational function to adult learning. By specifying certain objectives, educational processes are given a normative framework and serve to win people over to these ideas.

Taken together, it can be argued that the need to adapt to change and the prospect of societal transformation need not be mutually exclusive. Future skills are relevant both for individual adaptation and for collective formative processes. Cooperation, solidarity and the anticipation of alternative developments could be understood as principles complementing the dominant competitive paradigm.

2.4.2. Visions of the future behind the competence frameworks for future skills

In order to understand why future skills frameworks have different focuses, it is worth taking a look at the visions of the future on which they are based. These not only influence which challenges and opportunities are considered to be key, but also which skills are considered relevant for the future. Assumptions about societal, economic and technological developments therefore shape the content and objectives of the competence frameworks.

An examination of the background materials that can be found online regarding the competence frameworks reveals some common features of the visions of the future, two of which are particularly pronounced. Firstly, all competence frameworks emphasise that the world of the future will be subject to constant and rapid changes. Accordingly, the ability to adapt to new challenges, such as technological developments or societal changes, is present in the competence frameworks for future skills. Secondly, many competence frameworks assume that complexity will be increasing. They emphasise the need to work in an interdisciplinary manner and combine knowledge from different areas in order to overcome complex, global challenges.

However, their visions of the future also differ in key respects. Some competence frameworks, such as the SDGs and GreenComp, focus on sustainability and environmental responsibility. This perspective is closely related to the ‘doughnut model’ (Raworth, 2017), which views

ecological boundaries as the fundamental basis for economic and societal development. Based on this logic, economic and societal wellbeing can only be secured within the planetary stress limits, which is why sustainability skills are defined as essential future skills.

Other competence frameworks emphasise the promotion of democratic participation, as they see the strengthening of democratic structures and of an active civil society as a key prerequisite for the future. This perspective is based on the assumption that societal transformation depends above all on the population's ability to actively participate in decision-making processes and develop joint solutions to problems.

This contrasts with frameworks such as that of the World Economic Forum (WEF), which focus on economic requirements and technological innovation. They see future skills more as an instrument for promoting international competitiveness.

Another difference lies in the frameworks' geographical orientation. While the SDGs are global in scope, some competence frameworks are aimed at European or national challenges. The respective social contexts therefore influence the selection and weighting of skills of relevance for the future.

It is also noticeable overall that many future skills frameworks are based on general assumptions about the future and avoid specifying future scenarios. This is because all of them assume that even the relatively near future is uncertain and difficult to predict precisely. By making assumptions that are too specific, they would risk losing relevance if they proved to be incorrect. Accordingly, the competence frameworks aim to promote future skills that could be useful in a variety of possible future scenarios.

2.5. Social science view of future skills

The deliberate avoidance of specific scenarios makes it difficult to systematically review and empirically substantiate the proposed competences. Accordingly, it often remains unclear to what extent the future skills that are emphasised in the competence frameworks actually contribute to overcoming future challenges, in terms of educational success, employability, societal commitment or individual wellbeing, for example. It is also noteworthy that many competence frameworks only make limited use of existing academic findings, although these would offer numerous points of reference for critically reflecting on and further developing future skills.

The aim of this chapter is therefore to take a critical look at the academic basis of the future skills debate. The focus is on theoretical and empirical approaches that can contribute to the understanding and further development of future skills.

2.5.1. Changes in the demand for future skills on the labour market

One approach to examining the relevance of future skills is to analyse developments in the demand for skills on the labour market. Economic and sociological research has dealt intensively with this topic in recent decades. Even though this is usually not about future skills, but about retrospective shifts that can be measured over several years or even decades, such results can help to check the plausibility of assumptions about future skills.

One strand of this literature deals with changes in the demand for certain skills within and between occupations. It is assumed that digitalisation is a key driver of these changes. On the one hand, it causes restructuring in occupations. The argument here is that digital technology can replace workers and thus reduce the demand for workers in those occupations that involve a high level of routine activities (e.g Autor et al., 2003; Autor & Handel, 2013). On the other hand, digital technologies can lead to shifts in the skills required within the occupations and thus change the skills profiles of the occupations (Atalay et al., 2020; Bisello et al., 2019; Spitz-Oener, 2008).

Overall, it is clear that demand for the majority of skills has grown over time. One of the most visible changes is the increased demand for ICT skills (Bisello et al., 2019; Buchmann et al., 2020). Literature suggests that the need for ICT skills also increases the demand for other types of competences such as social and cognitive skills (Acemoglu & Restrepo, 2019; Bisello et al., 2021; Deming & Kahn, 2018). Researchers have also pointed to an increasing complementarity between cognitive and social skills (Borghans et al., 2013). Overall, the trend seems to be that a combination of skills to create ever richer skills profiles is in demand on the labour market (European Centre for the Development of Vocational Training, 2022).

2.5.2. Acceleration and complexity in social science theories

In addition to this empirical examination of shifts in the demand for skills, theory-based approaches can help to question and rethink the implicit assumptions behind future skills frameworks. As already mentioned, increasing acceleration and growing complexity are two key elements of future visions behind most future skills frameworks. Both phenomena have already been discussed many times in the social sciences, and theoretical approaches have been developed. The following is therefore a brief discussion of these approaches and how they relate to the topic of future skills.

Increasing acceleration can be seen as a continuation of a trend that was identified some years back, and which relevant literature has described with terms such as ‘social acceleration’ (Rosa, 2010). Social acceleration means that changes are not only taking place faster and

faster, but that the intervals between these changes is also becoming shorter and shorter. Here, social acceleration refers to various areas of life: technological developments, social changes and individual everyday life. Technological acceleration refers to the ever-faster development of new technologies and their rapid spread. Acceleration of societal changes means that social structures and norms are changing at ever shorter intervals. Acceleration of the pace of life is expressed in the feeling that everyday life is getting faster and faster, with increasing pressure to get more done in less time. According to the theory, societal acceleration leads to increasing pressure on individuals and organisations to adapt. The speed at which technological, economic and societal changes are taking place also requires people to learn new skills quickly.

However, the theory of social acceleration has been criticised to some extent, which can be particularly valuable for questioning the assumptions about future skills. Criticism is primarily directed against the universality of the acceleration thesis. The science theorist Andreas Reckwitz (Reckwitz, 2018), for instance, believes that there is no linear, universal acceleration, but rather a polarisation: some areas of society, such as highly technological and globalised areas, are experiencing extreme acceleration while others are slowing down or decoupling due to institutional or normative blockages. Movements such as slow food or the sharing economy, for instance, aim to promote a conscious slowing down of social processes (Nowotny, 1994).

In general, the connection between the theoretical assumptions of social acceleration and concepts of future skills can be understood in such a way that acceleration drives the need for new skills, and future skills provide the tools to operate successfully in an accelerated society. However, the criticism of the universality of acceleration theory in particular makes it clear that future skills cannot have universal validity. The assessment and relevance of future skills depends heavily on the respective social, professional and cultural context and the speed of acceleration within it. While the future skills of certain competence frameworks can therefore be useful in some areas, they may be considered unnecessary in others. This plurality requires context-related reflection in terms of which skills will actually be needed in the future.

Closely linked to the theory of social acceleration are theories that deal with the increasing complexity of postmodern societies. Niklas Luhmann's systems theory (Luhmann, 1987) provides a framework for explaining the dynamics of increasing complexity. According to Luhmann, society has increasingly split into autonomous subsystems such as politics, economy, law and science, each of which operates according to its own logic. Subsystems are not only increasingly differentiated, but also interact with each other. Decisions in one subsystem often have an impact on others. The complex interweaving of subsystems creates a highly fragmented yet interdependent social fabric.

In a highly differentiated society, as Luhmann describes it, individuals and organisations must be able to operate in and understand different subsystems (e.g. politics, economy, science). The logics of these systems are often very different, which requires the players to be able to develop cross-system, interdisciplinary skills. These are often competences described as future skills. In contrast, specialised expertise alone is no longer sufficient, although it is becoming increasingly important within the subsystems.

Michel Foucault (e.g. Foucault, 1978) criticises and complements this perspective by questioning the ideas of truth, knowledge and power. He argues that the complexity of society arises not only from functional differentiation, but also from the diversity of power structures and corresponding discourses that operate simultaneously. In his analysis, Foucault makes it clear that power is not only repressive, but also has a productive effect by creating certain orders of knowledge and determining what is considered as 'truth' (see also https://thinktank-transit.ch/en/the-concept-of-heterotopia/).

This perspective is particularly relevant in a highly differentiated society in which power is no longer centralised, but decentralised and distributed through networks. Accordingly, the ability to navigate through a network of power and discourses is also becoming important. In this sense, future skills such as critical thinking, the ability to reflect and ethical competence are essential in order to understand how knowledge is embedded in power structures and how it can be generated, used or misused.

In addition, Foucault's approach encourages us to take a critical look at the future skills frameworks themselves. These competence frameworks are not independent of the social power relations and discourses in which they arise. Rather, they often reflect dominant ideas about what futures are desirable and what skills are needed for them. This leads to a normativity that must be questioned: Who defines which skills are considered as relevant for the future? What interests and power structures underlie these definitions? And to what extent does this favour or disadvantage certain social groups? A reflective approach to future skills frameworks therefore requires contextualisation. It is necessary to analyse the cultural, economic and political conditions under which these competence frameworks emerge. Foucault's approach offers an important thinking tool for expanding the debate on future skills from mere adaptation strategies to a critical reflection on social goals and values.

2.5.3. Empirical evidence of the effects of future skills

A third, academically based approach that can be used to reflect on the discourse surrounding future skills is to look at empirical evidence of the effects of future skills. Surprisingly, there has so far been little empirical research into the future skills frameworks that clarifies the

extent to which the competences have actually proved relevant and, if so, what for and in what context. This is worth considering as the future skills frameworks aim to influence the educational system or individual educational institutions in their orientation and purpose. However, without valid studies on the benefits of future skills, any action geared towards them will have no evidence-based foundation (Kalz, 2023). However, regardless of discussions on future skills, there is plenty of evidence of the effects of relevant skills, even if they are not designated as future skills. Some examples of the results are summarised below.

In education, the question of how interdisciplinary skills influence learning and educational success, in particular, is examined. Studies show, for instance, that critical thinking, problem-solving skills and social skills can support educational success. Thus, higher socio-emotional skills in schoolchildren compensate for the relative deficits in cognitive and language skills in relation to school grades (Denham et al., 2014; Gut et al., 2012). Self-regulation has also been shown to be a key predictor of children's early school success and academic performance (Neuenschwander et al., 2012). There are numerous other studies on various competences, also denominated as future skills, which show a positive effect on school success. However, most studies only measure short-term correlations rather than longer-term effects. In addition, they mostly focus on future skills in schoolchildren and it is not clear whether these effects can also be transferred to adults.

The psychological perspective often focuses on the connection between skills and individual life satisfaction as well as mental health. Research points to a positive correlation between social skills and psychological wellbeing, for instance. People with strong social skills report a lower level of depression, greater life satisfaction and a lower level of stress (Demir et al., 2012; Segrin et al., 2007). The Harvard Study of Adult Development, the world's longest-running longitudinal study, also confirms this. According to research results, skills such as emotional intelligence, resilience and creativity also have a positive influence on mental health and life satisfaction (e.g. Schutte et al., 2007).

From a sociological perspective, the question is often raised as to how skills contribute to social participation and social mobility. It has been shown, for instance, that social and emotional skills have a positive effect on upward social and occupational mobility as well as on various other outcomes (Belfi & Borghans, 2025; Esping-Andersen & Cimentada, 2018; Gerli et al., 2015).

Economic research usually emphasises the monetary returns that are achieved through skills. It is pointed out, for instance, that non-cognitive skills yield a higher return than cognitive skills for men with a similar qualification level, although this is due to redistribution to better-paid occupations (Edin et al., 2022). A meta-analysis finds that conscientiousness and openness are two skills that lead to higher wages, with older and female participants appearing to benefit more from

programmes aimed at developing non-cognitive skills than younger participants and men (Cabus et al., 2021; Hanushek et al., 2015).

2.6. Futures Literacy aiming to shape alternative futures

The remarks above on the visions of the future behind future skills and their academic positioning have shown that an examination of future skills is also about revealing assumptions, questioning them and thinking about alternative visions of the future. The concept of Futures Literacy becomes important against this background.

Futures Literacy was developed by Riel Miller (2018) and UNESCO as a concept to enable people to understand the future as a space of possibilities that they can actively shape. Miller emphasises that the future is a social construction that is influenced by collective decisions, cultural values and political framework conditions. Futures Literacy aims to promote individuals' ability to anticipate and think in futures and to enable them to reflect on both personal and social goals in these futures. A central concern here is to question dominant narratives about the future.

The simplest Futures Literacy skills include the following by way of example: all people regularly envisage different futures. They plan their day or a holiday. They have wishes for their birthdays, their private lives or their professional careers. They also know that the future does not always turn out the way they expect or want it to be. But they are still able to act in the present. They are more open to new ideas and activities (Bergheim, 2024).

The theoretical basis of Futures Literacy lies in anticipatory systems theory (Rosen, 1985). This states that systems - including people, organisations or societies - not only react to the present, but are also influenced by their expectations and ideas about the future. Imagination is a central mechanism that enables systems to simulate future states and derive decisions for action from them.

Another aspect of anticipatory systems theory is the importance of feedback loops. Ideas about the future not only influence actions in the present; indeed, actions in turn change the conditions that shape future states. This means that decisions made today have an impact on the future, and this requires ethical reflection. It is also important to take into account the socially and culturally shaped structures and discourses and the unimaginable that goes with them. This is because thoughts about the future are embedded in a social and cultural context. Given the power that images of the future exert on our perception and our actions, most new phenomena remain invisible and irrelevant because they are excluded from our images of the future (Larsen, 2020).

Futures Literacy can provide a thinking tool to address the challenges and limitations of current future skills frameworks. Firstly, Futures Literacy encourages thinking in terms of possibilities and focuses on a

pluralistic and flexible future in which more than the future skills of a single framework are conceivable. Secondly, Futures Literacy helps to reflect on the extent to which future skills are context-dependent, socially and culturally shaped and changeable. Futures Literacy can help to overcome the boundaries set by dominant discourses, which often limit what is perceived as a possible future. This ties in with Foucault's analysis of power and discourse: dominant narratives shape what is considered 'conceivable' and often make alternative perspectives invisible. Futures Literacy, on the other hand, calls for the 'unimaginable' to be made visible and for spaces to be opened up for alternative ways of thinking. This approach also makes it possible to identify new perspectives for future developments that lie beyond the dominant conceptions. Thirdly, the concept can support the strategic development of future skills frameworks by capturing the dynamic nature of future developments and highlighting the need for continuous adaptation and realignment of competence frameworks in line with emerging scenarios. Futures Literacy offers the tools to shift the focus from reactive adaptation strategies to anticipatory design.

2.7. Conclusions of the theoretical considerations

The analysis of various future skills frameworks shows that they have different orientations and visions of the future, with each model having its own strengths and weaknesses. While some competence frameworks are backed only by limited empirical evidence, there are social science theories, debates and empirical findings that underpin the relevance of future skills.

As illustrated by the above, it is crucial here to focus on a pluralistic and flexible future in order to enable a more conscious approach to the uncertainties of future developments. The future is not predetermined; it is open and can be shaped. Future skills should therefore not be seen as rigid competence grids, but as dynamic and context-dependent competences that have to adapt to social, technological and economic changes.

In addition, the designing of future skills frameworks should be understood as a continuous process that must be continually reviewed and developed. The dynamic nature of social developments requires constant adaptation and realignment of these competence frameworks in line with new scenarios and challenges. Instead of reacting exclusively to foreseeable changes, it is necessary to develop forward-looking approaches that make it possible to actively contribute to shaping future developments.

At the same time, it is important to critically scrutinise the boundaries of what is conceivable that are set by dominant discourses. Prevailing narratives often determine which futures appear possible, while alternative perspectives are ignored. Existing ideas about what skills will be required in the future are often shaped by specific economic, political

or technological interests. In order to gain a more comprehensive understanding of future skills, different future perspectives must therefore be considered and possible development paths kept open.

Despite these limitations, competence frameworks can be valuable tools for aligning adult learning with the requirements of the future and actively shaping its role in social transformation processes. They offer a structured orientation for the development of skills that are relevant for the labour market as well as for social, ecological and democratic challenges.

The wide variety of competence models opens up scope for context-related selection and adaptation for specific purposes or target groups. At the same time, it is necessary to critically scrutinise their underlying assumptions and potential disadvantages. Each framework sets certain priorities and is based on specific visions of the future that are not equally viable in all contexts. An overly rigid focus on individual models can lead to major developments being overlooked or alternative future paths being ignored.

Adult learning should therefore use competence frameworks flexibly and adaptively, develop them further for the respective purposes and integrate different perspectives into this process. This is the only way to ensure that future skills are understood not just as a reaction to predetermined trends, but as active design competences.

3. Implications for adult learning

The findings from the theoretical considerations on future skills raise key questions for adult education: How can it respond to the diversity of visions of the future? What role does it play in teaching and developing future skills? And to what extent can it contribute to shaping social transformation processes instead of merely adapting to existing trends?

Although there is no simple, generally valid answer to the question regarding the skills of the future, some pointers for adult education stakeholders on how to deal with the topic of future skills may be helpful. Adult education stakeholders are understood here to include not only trainers and adult education providers, but also systems and political support structures, as well as those responsible for adult education and learning in companies.

This chapter highlights some key implications for adult education. The following subchapters list some sample questions to stimulate reflection among adult education stakeholders. These are intended as an invitation to engage in an in-depth discussion of visions of the future, educational goals and possible courses of action.

3.1. The future as a space of possibilities

Future skills frameworks usually list what they consider to be key competences that could be of importance in various future scenarios. However, there is no consensus on which of these competences are especially important. This is partly due to uncertainties about the future. It therefore makes sense to view the future not as a fixed state, but as a (free) space of possibilities in which different futures are conceivable and can be built.

This implies that education cannot be geared towards fixed and static ideas about the future. Rather, it must be flexible enough to adapt to different potential futures. Adult education providers might themselves adopt an attitude of openness and experimentation. This means that they do not present future skills as 'solutions' to the demands of the future, but rather as one possibility among many, while at the same time opening up a discussion about different visions of the future.

This approach recognises that there are no guaranteed answers to tomorrow's challenges, only approaches that need to be adapted and further developed depending on the context and how things evolve. At the same time, this approach means that adult education can help adults develop their own ideas about the future. It can give them the space to decide for themselves which competences they consider to be valuable future skills in their specific life and work context.

This openness to design can be inspiring. At the same time, it is likely to overwhelm and unsettle many people, which is why guidance (for reflection) is often needed to enable future-orientated thinking in the first place.

KEY QUESTIONS FOR ADULT EDUCATION STAKEHOLDERS:

What political and structural conditions are necessary to ensure that adult education is not merely seen as a means of adapting to the labour market, but as a comprehensive contribution to shaping the future of society? (System and support structures)

What role does adult education play in not only responding to future requirements, but also in developing alternative scenarios for the future and opening up new opportunities for shaping society? (System and support structures)

How can adult education programmes be designed so that they not only prepare adults for expected developments, but also enable them to deal with unexpected changes? (Providers and trainers)

How can adult education create space for open discussion of different visions of the future, rather than merely reproducing existing competence frameworks? (Providers and trainers)

How can trainers be supported so that they themselves adopt an experimental and open-minded attitude, and pass this on to partici-

pants? (Providers and trainers)

How can companies and organisations in company training ensure that they not only teach skills that are currently in demand, but also provide space for the development of future skills? (Companies)

What structures promote a culture of reflection and future planning within companies? (Companies)

To what extent do company training formats offer space for exploring alternative futures? (Companies)

3.2. Context sensitivity of visions of the future

Social and economic sub-sectors are subject to processes of change that vary in intensity and speed. As a result, visions of the future and thus also the relevant future skills are influenced by the social and economic context.

This means that adult education must not view future skills as rigid, universally valid lists of competences, but rather interpret them flexibly and in a context-specific manner. To this end, adult education providers must not only draw on existing future skills frameworks, but also allow for adjustments that take the context of their application into account. This requires an open discussion of different, context-specific perspectives on the future.

KEY QUESTIONS FOR ADULT EDUCATION STAKEHOLDERS:

What contexts are the visions of the future used in adult education orientated towards, and what perspectives may be overlooked? (All)

How can adult education stakeholders promote future skills in such a way that they support people in the social change processes that are relevant to them, and prevent social challenges from becoming solely the responsibility of individuals? (System and support structures)

How can providers and trainers facilitate the exchange of experiences and opinions among participants in order to promote discussion and dealing with heterogeneity? (Providers and trainers)

What role do companies play as places for exchanging diverse visions of the future and value orientations? How can this exchange support strategy development? (Companies)

How can joint reflection on visions of the future strengthen work taking place in diverse teams and across disciplinary boundaries? (Companies)

3.3 Dominant discussions on education and the future

Future skills frameworks are not neutral concepts; they are shaped by dominant discussions and social power relationships. They reflect specific assumptions about the role of (adult) education and how social change should be shaped. Future skills frameworks and discussions are therefore also based on specific economic, political or cultural interests.

This makes it necessary for all education stakeholders to critically examine competence frameworks. This is not just a matter of checking whether certain future skills can be considered useful in a given context, but also of reflecting on the visions of the future and society that underlie them and whether these correspond to those of the education stakeholders. Engaging with future skills can thus also serve as an opportunity to review one's own understanding of skills, objectives and values in the light of pluralistic visions of the future.

KEY QUESTIONS FOR ADULT EDUCATION STAKEHOLDERS:

What assumptions about society, the economy and the future underlie the future skills frameworks used in adult education? To what extent do the competence models used reflect the values and goals of the respective educational institution, company or political support structures? (All)

What role do alternative, non-dominant visions of the future play in adult education? (All)

How can providers ensure that they critically question power structures in the design of educational content and encourage adults to do the same? (Providers and trainers)

Which future skills are already being implicitly promoted, and how can these processes be made explicit and tangible? (Providers and trainers)

How can providers and trainers take on a role model function through critical reflection? (Providers and trainers)

How can space be created in companies to discuss values, norms and implicit assumptions about the future in relation to future skills? (Companies)

To what extent do existing competence requirements in companies reflect dominant social ideas, and how can alternative perspectives be introduced? (Companies)

How can companies make the negotiation process regarding future goals and adult education needs more participatory? (Companies)

3.4 Ethical responsibility and shaping the future

Visions of the future shape not only individual educational pathways, but also social conditions for future generations. Decisions about which skills are taught and prioritised help to shape the paths of social development.

The stakeholders in adult education therefore have a responsibility to reflect critically on the long-term effects of their approach to future skills and to link these to social visions. At the same time, the diversity of possibilities offers scope for shaping the desired future.

For this to succeed, it is necessary to reflect on our understanding of the education that underlies the teaching of future skills, and on which social visions of the future are to be supported by future skills. Adult education cannot be neutral in this regard; it needs to be aware of the implicit visions of the future and the priorities that it conveys.

KEY QUESTIONS FOR ADULT EDUCATION STAKEHOLDERS:

- How can we reflect ethically on our own ideas about the future? (All)
- How can adult education ensure that it is helping to shape long-term social developments? (All)
- How can ethical guidelines for dealing with future skills be developed and implemented? (System and support structures)
- What paths lead from the promotion of individual skills to social transformation? (System and support structures)
- How can adult education be used as a platform for social negotiation processes on values and visions of the future? (System and support structures)
- How can adult education organisations design internal processes in such a way that reflection on future visions is linked to a sense of responsibility for the future? (Providers and trainers)
- How can adult education support participants in developing their own social and ethical visions of the future? (Providers and trainers)
- What responsibility do companies have for promoting future-oriented skills, beyond commercial interests? (Companies)
- What organisational structures are needed to successfully integrate ethical and social objectives into corporate learning processes? (Companies)

The implications for adult education being discussed, and the questions being raised, are aimed at a conceptual examination of future skills. This report deliberately pays little attention to the practical implementation of promoting future skills in adult education. The following study provides practical insight into this question:

'Future skills in adult education: an analysis of their importance and implementation in practice. Results of a survey conducted in collaboration with the DIALOG practice network for knowledge transfer and innovation'

In 2024, the DIALOG practice network, coordinated by the German Institute for Adult Education (Deutsches Institut für Erwachsenenbildung; DIE), conducted a survey on future skills. The aim was to determine the role of adult education in promoting future skills from the perspective of adult education practitioners and learners.

Overall, the survey results clearly show that the teaching of future skills already plays a relevant role in adult education practice, but that the term 'future skills' is not usually used explicitly. Rather, the relevant skills are often addressed implicitly through content, didactic concepts and methodological approaches. It is precisely this implicit teaching that offers previously untapped potential: if education providers and teachers made it clearer which future skills are promoted in their programmes, learners would be able to perceive them more consciously, reflect on them and recognise them as part of their skills profile.

The study will be published at the end of June under the DIE heading 'Results'. Authors: Brigitte Bosche and Mona Pielorz, contact: Bosche@die-bonn.de

3.5 Tools for dealing with future skills and visions of the future

This chapter adds a practical dimension to the overarching theoretical perspectives presented in this report. The report is mainly aimed at stimulating new ways of thinking and enabling a systemic view of the future and of adult learning. Here, however, we present a selection of tools that can support actual engagement with visions of the future and future skills in educational and organisational contexts.

CARD SETS AS A PLAYFUL APPROACH TO REFLECTING ON QUESTIONS ABOUT THE FUTURE

Card sets are a creative and accessible way to address, reflect on and discuss questions regarding the future. They can be used in a variety of settings, including education, organisational development and personal use. They encourage people to engage with trends, skills and possible future scenarios.

- TRANSIT card set: 'Questions about the future'

  → For reflecting on and discussing future issues from the perspective of adult education; inspires critical debate.

- Future Skills card set from Nextskills

  → Developed to promote future-relevant skills; supports learners in self-assessment and targeted further development.

- 'Future trends' card set from Berliner Ideenlabor

  → Visualises megatrends and serves as a starting point for strategy work or trend analyses.

– 'For Future – 100 stimulus cards for a changing world' published by Beltz Verlag

  → Provides food for thought for change and sustainable action

– 'Future Skill card set' from Digitalwerkstatt

  → Focuses on digital and social skills.

FUTURES LITERACY

Futures Literacy, developed by UNESCO, provides a conceptual framework for dealing productively with the uncertainty of future developments. Futures Literacy promotes the ability to recognise one's own assumptions about the future, critically question dominant narratives and think about alternative future scenarios. In the context of adult learning, Futures Literacy can be used to create spaces for reflection in which learners and education stakeholders can think about possible, probable and desirable futures.

UNESCO provides various materials for working with Futures Literacy on its website (https://www.unesco.org/en/futures-literacy/resources):

– Futures Literacy origami, for playful exploration of the future
– A summary of Futures Literacy labs with practical instructions
– A video library
– Publications on Futures Literacy

MEGATRENDS

Summarising complex developments into megatrends can be helpful for orientation in a constantly changing world, and for identifying overarching patterns. In adult education, they can also serve as an orientation tool to help clarify strategic issues. For example, what social shifts could place new demands on adult education? Some examples of how megatrends are being addressed:

– The German Zukunftsinstitut's 'Megatrend Map'

  → Structured visualisation of megatrends, establishing relationships between them.

– Megatrend Report by Swissfuture

  → Analysis of relevant future trends, with a focus on Switzerland.

– The European Commission's Megatrends Engagement Tool

  → Interactive platform for exploring global megatrends; workshop method including materials available to download.

As in the third TRANSIT trend report on flexibilisation, this report also concludes with three overarching perspectives: meaningfulness, diversity and complexity. These three perspectives were deliberately chosen again as they have proven to be a viable orientation framework for linking developments in adult education with fundamental social issues.

The perspectives go beyond the level of specific implications for practical action in adult education. They are intended to open up a view of the social relevance of adult education from the perspective of future skills and, in the best case, to trigger long-term considerations and further development.

Meaningfulness

Adult education not only serves to develop functional skills, but is also aimed at supporting adults in finding their place in a changing world and making a meaningful contribution to social coexistence. Adult education promotes meaningfulness throughy:

- …linking future skills with social visions.
- …focusing on individual and social needs beyond the requirements of the world of work.
- …learning that opens up new horizons and encourages people to shape social change, rather than simply adapting to it.
- …embedding personal development in a larger social context, whereby future skills are more than just a means of self-optimisation.

Variety and diversity

Social developments do not proceed in the same way everywhere, and visions of the future differ depending on perspective and context. Adult education promotes variety and diversity by:

- …providing space for different approaches to the future and for dialogue between those with different perspectives.
- …presenting future skills as an open concept that connects with different realities of life.
- …opportunities to reflect on and further develop competence models from one's own perspective.

Complexity

The future is unpredictable and depends on complex interrelationships and developments. The multitude of visions of the future and the associated understandings of future skills reflect this complexity. Adult education promotes the ability to deal with complexity throughy:

- …presenting future skills as a topic for reflection and not as a simple solution to challenges.
- …providing space for many possible futures without reducing them to a single perspective.
- …addressing contradictory developments and changing conditions.
- …disclosing and questioning one›s own assumptions.

Literature

Acemoglu, D., & Restrepo, P. (2019): Automation and New Tasks: How Technology Displaces and Reinstates Labor. Journal of Economic Perspectives, 33(2), 3–30. https://doi.org/10.1257/jep.33.2.3

Atalay, E., Phongthiengtham, P., Sotelo, S., & Tannenbaum, D. (2020): The Evolution of Work in the United States. American Economic Journal: Applied Economics, 12(2), 1–34. https://doi.org/10.1257/app.20190070

Autor, D. H., & Handel, M. J. (2013): Putting Tasks to the Test: Human Capital, Job Tasks, and Wages. Journal of Labor Economics, 31(S1), S. 59–S96. https://doi.org/10.1086/669332

Autor, D. H., Levy, F., & Murnane, R. J. (2003): The Skill Content of Recent Technological Change: An Empirical Exploration. The Quarterly Journal of Economics, 118(4), 1279–1333. https://doi.org/10.1162/003355303322552801

Barrett, M. (with Europarat). (2016): Competencies for democratic culture: Living together as equals in culturally diverse democratic societies. Council of Europe.

Belfi, B., & Borghans, L. (2025): The importance of socio-emotional skills for multiple life outcomes and the role of education. In: Handbook of Education and Work (S. 75–104). Edward Elgar Publishing.

Bergheim, S. (2024): On the Competence of Futures Literacy. Center for Societal Progress, and FUON Futures. https://www.researchgate.net/publication/383122741_On_the_Competence_of_Futures_Literacy

Bianchi, G., Pisiotis, U., & Cabrera Giraldez, M. (2022): GreenComp, The European sustainability competence framework. Publications Office of the European Union.

Biesta, G. (2013): The beautiful risk of education. Paradigm Publishers.

Bisello, M., Fana, M., Fernandez-Macias, E., & Torrejon Perez, S. (2021): A comprehensive European database of tasks indices for socio-economic research (JRC Working Papers on Labour, Education and Technology). European Commission.

Bisello, M., Peruffo, E., Fernandez-Macias, E., & Rinaldi, R. (2019): How computerisation is transforming jobs: Evidence from the Eurofund's European Working Conditions Survey, Seville: European Commission, 2019, JRC117167. (JRC117167). European Commission.

Borghans, L., ter Weel, B., & Weinberg, B. A. (2013): People skills and the labor-market outcomes of underrepresented groups. CPB Netherlands Bureau for Economic Policy Analysis.

Buchmann, M., Buchs, H., & Gnehm, A.-S. (2020): Occupational Inequality in Wage Returns to Employer Demand for Types of Information and Communications Technology (ICT) Skills: 1991–2017. KZfSS Kölner Zeitschrift für Soziologie und Sozialpsychologie, 72(S1), 455–482. https://doi.org/10.1007/s11577-020-00672-5

Cabus, S., Napierala, J., & Carretero, S. (2021): The returns to non-cognitive skills: A meta-analysis (JRC Working Papers Series on Labour, Education and Technology 2021/06). European Commission, Joint Research Centre (JRC). https://hdl.handle.net/10419/233211

Coleman, J. S. (1990): Foundations of social theory. Belknap press of Harvard university press.

Deming, D., & Kahn, L. B. (2018): Skill Requirements across Firms and Labor Markets: Evidence from Job Postings for Professionals. Journal of Labor Economics, 36(S1), S. 337–S369. https://doi.org/10.1086/694106

Demir, M., Jaafar, J., Bilyk, N., & Mohd Ariff, M. R. (2012): Social Skills, Friendship and Happiness: A Cross-Cultural Investigation. The Journal of Social Psychology, 152(3), 379–385. https://doi.org/10.1080/00224545.2011.591451

Denham, S. A., Bassett, H. H., Zinsser, K., & Wyatt, T. M. (2014): How Preschoolers' Social-Emotional Learning Predicts Their Early School Success: Developing Theory-Promoting, Competency-Based Assessments: How Preschoolers' Social-Emotional Learning Predicts. Infant and Child Development, 23(4), 426–454. https://doi.org/10.1002/icd.1840

Dernbach, S., & Schüepp, P. (2019): Weiterbildung in Schweizer Kleinstunternehmen. SVEB. https://alice.ch/app/uploads/2022/10/190913_Weiterbildung_in_Schweizer_Kleinstunternehmen.pdf

Edin, P.-A., Fredriksson, P., Nybom, M., & Öckert, B. (2022): The Rising Return to Noncognitive Skill. American Economic Journal: Applied Economics, 14(2), 78–100. https://doi.org/10.1257/app.20190199

Ehlers, U.-D. (2020): Future Skills: Lernen der Zukunft – Hochschule der Zukunft. Springer VS.

Ehlers, U.-D. (2022): Future Skills im Vergleich. https://nextskills.org/wp-content/uploads/2022/05/2022-01-Future-Skills-Bildungsforschung_final_Vs_2.pdf

Epstein, D. J. (2020): Es lebe der Generalist! Warum gerade sie in einer spezialisierten Welt erfolgreicher sind (A. Braun, Übers.; 1. Auflage). Redline Verlag.

Esping-Andersen, G., & Cimentada, J. (2018): Ability and mobility: The relative influence of skills and social origin on social mobility. Social Science Research, 75, 13–31. https://doi.org/10.1016/j.ssresearch.2018.06.003

Esser, H. (1999): Soziologie: Allgemeine Grundlagen (3. Aufl). Campus-Verl.

European Centre for the Development of Vocational Training. (2022): Setting Europe on course for a human digital transition: New evidence from Cedefop's second European skills and jobs survey. Publications Office. https://data.europa.eu/doi/10.2801/253954

Foucault, M. (1978): Dispositive der Macht: Über Sexualität, Wissen und Wahrheit. Merve Verl.

Gerli, F., Bonesso, S., & Pizzi, C. (2015): Boundaryless career and career success: The impact of emotional and social competencies. Frontiers in Psychology, 6. https://doi.org/10.3389/fpsyg.2015.01304

Gut, J., Reimann, G., & Grob, A. (2012): Kognitive, sprachliche, mathematische und sozial-emotionale Kompetenzen als Prädiktoren späterer schulischer Leistungen: Können die Leistungen eines Kindes in den IDS dessen Schulleistungen drei Jahre später vorhersagen? Zeitschrift für Pädagogische Psychologie, 26(3), 213–220. https://doi.org/10.1024/1010-0652/a000070

Hanushek, E. A., Schwerdt, G., Wiederhold, S., & Woessmann, L. (2015): Returns to skills around the world: Evidence from PIAAC. European Economic Review, 73, 103–130. https://doi.org/10.1016/j.euroecorev.2014.10.006

Kalz, M. (2023): Zurück in die Zukunft?: Eine literaturbasierte Kritik der Zukunftskompetenzen. MedienPädagogik: Zeitschrift für Theorie und Praxis der Medienbildung, 332–352. https://doi.org/10.21240/mpaed/00/2023.11.19.X

Kraus, K. (2022): Erwachsenenbildung im Kontext gesellschaftlicher Veränderungen. Eine exemplarische Analyse anhand historischer Entwicklungen in der Schweiz. Education Permanente, 2. https://www.ep-web.ch/fileadmin/article_pdfs/69899_Deutsch_SVEB_Education_Permanente.pdf

Lamb, S., Maire, Q., & Doecke, E. (2017): Key skills for the 21st century: An evidence-based review. http://vuir.vu.edu.au/35865/1/Key-Skills-for-the-21st-Century- Analytical-Report.pdf

Larsen, N. (2020): What Is 'Futures Literacy' and Why Is It Important? https://nicklaslarsen.medium.com/what-is-futures-literacy-and-why-is-it-important-a27f24b983d8

Luhmann, N. (2021): Soziale Systeme: Grundriß einer allgemeinen Theorie (18. Auflage). Suhrkamp.

Manninen, J., Jetsu, A., & Sgier, Irena. (2020): Change-oriented adult education in the fileds of democracy and digitalization. https://eaea.org/project/future-lab/

Neuenschwander, R., Röthlisberger, M., Cimeli, P., & Roebers, C. M. (2012): How do different aspects of self-regulation predict successful adaptation to school? Journal of Experimental Child Psychology, 113(3), 353–371. https://doi.org/10.1016/j.jecp.2012.07.004

Nowotny, H. (1994): Time: The modern and postmodern experience. Polity press.

Pellegrino, J., & Hilton, M. (2013): Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century. National Academies Press.

Raworth, K. (2017): A Doughnut for the Anthropocene: Humanity's compass in the 21st century. The Lancet Planetary Health, 1(2), e48–e49. https://doi.org/10.1016/S2542-5196(17)30028-1

Reckwitz, A. (2018): Die Gesellschaft der Singularitäten. Zur Kulturalisierung des Sozialen. In: Kultur—Interdisziplinäre Zugänge (S. 45–62). Springer.

Redman, A., & Wiek, A. (2021): Competencies for Advancing Transformations Towards Sustainability. Frontiers in Education, 6, 785163. https://doi.org/10.3389/feduc.2021.785163

Rosa, H. (2010): Alienation and acceleration: Towards a critical theory of late-modern temporality. NSU Press.

Rosen, R. (1985): Anticipatory systems: Philosophical, mathematical, and methodological foundations (1st ed). Pergamon Press.

Rychen, D. S., & Salganik, L. H. (Hrsg.). (2003): Key competencies for a successful life and a well-functioning society. Hogrefe & Huber.

Sala, A., Punie, Y., Garkov, V., & Cabrera, M. (2020). LifeComp: The European Framework for Personal, Social and Learning to Learn Key Competence.

Scharnhorst, U., & Kaiser, H. (2018): Bericht Transversale Kompetenzen, im Auftrag des Staatssekretariats für Bildung, Forschung und Innovation SBFI im Rahmen des Projekts «Berufsbildung 2030 – Vision und Strategische Leitlinien». Staatssekretariat für Bildung, Forschung und Innovation SBFI.

Schutte, N. S., Malouff, J. M., Thorsteinsson, E. B., Bhullar, N., & Rooke, S. E. (2007): A meta-analytic investigation of the relationship between emotional intelligence and health. Personality and Individual Differences, 42(6), 921–933. https://doi.org/10.1016/j.paid.2006.09.003

Segrin, C., Hanzal, A., Donnerstein, C., Taylor, M., & Domschke, T. J. (2007): Social skills, psychological well-being, and the mediating role of perceived stress. Anxiety, Stress & Coping, 20(3), 321–329. https://doi.org/10.1080/10615800701282252

Spitz-Oener, A. (2008): The Returns to Pencil Use Revisited. ILR Review, 61(4), 502–517. https://doi.org/10.1177/001979390806100404

Stops, M., Laible, M.-C., & Leschnig, L. (2022): Überfachliche Kompetenzen sind gefragt – allen voran Zuverlässigkeit und Teamfähigkeit. IAB-Forum, 202202. https://doi.org/10.48720/IAB.FOO.20220216.01

Suessenbach, F., Winde, M., Klier, J., & Kirchherr, J. (2021): Future Skills 2021: 21 Kompetenzen für eine Welt im Wandel. (Diskussionspapier 3). Stifterverband, McKinsey & Company.

Voogt, J., & Roblin, N. P. (2012): A comparative analysis of international frameworks for 21 st century competences: Implications for national curriculum policies. Journal of Curriculum Studies, 44(3), 299–321. https://doi.org/10.1080/00220272.2012.668938

Vuorikari, R., Kluzer, S., & Punie, Y. (2022): DigComp 2.2, The Digital Competence framework for citizens: With new examples of knowledge, skills and attitudes. Publications Office of the European Union.

WEF. (2023): Future of Jobs Report 2023. https://www.weforum.org/reports/the-future-ofjobs- report-2023/

Publication details

Author
Dr. Helen Buchs, Head of TRANSIT

Contact
TRANSIT
c/o Swiss Federation for Adult Learning (SVEB)
Hardstrasse 235
8005 Zurich, Switzerland
www.thinktank-transit.ch/en
Email: helen.buchs@thinktank-transit.ch

Graphic concept and design
Völlm + Walthert, Zurich

Proofreading
Karin Büchler

Funding
The preparation of the trend report was financially supported by the State Secretariat for Education, Research and Innovation (SBFI).

Bibliographic details
Buchs, Helen (2025): Future Skills and the Future of Adult Learning. Zürich: SVEB.

SVEB
FSEA

Zurich, June 2025