# IDENTIFICATION AND DEVELOPMENT OF FUTURE-ORIENTED COMPETENCES

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**Abstract.** Nowadays we live in the world, characterised by volatility, uncertainty, complexity, and ambiguity (VUCA). Thus, it is necessary to prepare staff to function in the dynamically changing conditions and equip them with appropriate competences. The article is aimed at discussing the legitimacy of applying foresight and Future Literacy approaches for the needs of developing future-oriented competences. Firstly, the authors focus on the indication of the key competences of the future, selected as a result of the research conducted so far by scholars and practitioners. Next, they present the results of an analysis concerning the possibilities of applying foresight and Futures Literacy approaches in the context of the future of work. Against this background, the authors discuss the legitimacy of applying foresight and Futures Literacy approaches for the purpose of enhancing competences of the future. The authors state that application of these modern anticipation approaches responds to the current needs generated by dynamic changes in the environment, which are characterised by high unpredictability and uncertainty.

**Keywords:** future-oriented competences, foresight, Futures Literacy, uncertainty, creativity, VUCA.

**JEL Classification:** J24, M53.

## Introduction

The contemporary world is characterised by volatility, uncertainty, complexity, and ambiguity (VUCA). To navigate VUCA environments, it is essential to emphasise agility, flexibility, resilience, and updating capabilities (Millar et al., 2018).

The nature of work changes rapidly, differently, and to a greater extent than in the past years, affecting a greater number of individuals (Schulte et al., 2020). The dynamic changes taking place on the labour market, resulting, among others, from technological development and an increase in digitisation justify the need for systematic verification and updating of competences that should correspond to the current requirements of individual sectors of the economy, the R&D sphere, etc. Anticipatory thinking regarding new and persistent factors affecting work and workers is required (Schulte et al., 2020).

Problems with the availability of employees favour investments in machines and software (Czarnik et al., 2021), which means that, along with the development of companies, their competency needs grow. "On average, companies estimate that around 40% of workers will require reskilling of six months or less and 94% of business leaders report that they expect employees to pick up new skills on the job, a sharp uptake from 65% in 2018" (World Economic Forum, 2020). The available labour market analyses and numerous research and empirical studies indicate important skill mismatches and the existence of deficit competences both in relation to the current and forecasted needs of employers (European Commission, 2015; Kocór, 2019). According to investigations carried out by the Polish Economic Institute (Dębkowska et al., 2022), entrepreneurs notice the shortage of employees and the progressive digitisation of companies, as well as the persistent high level of uncertainty of the environment and an increased risk of the business activity. They are aware that these factors will trigger the demand for new employee competences. One of the ways of dealing with the consumption of competences and the problem of competency mismatch is the development of new competences (Kocór, 2019).

To cope with complex life situations, European citizens need to continuously develop competences which allow them to successfully manage the challenges posed by the many transitions taking place in their work, in

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their personal spheres, and in society. Individuals need to deal with uncertainty, nurture their resilience, develop on a personal level, build successful interpersonal relations, and learn how to learn. Formal, non-formal, and informal education can contribute to the acquisition of these competences (Sala et al., 2020).

It can be stated that only the development of new competences is a chance for success on the future labour market. Due to the importance of uncertainty, discontinuities of changes, and dynamic turbulences, it is worth considering the use of foresight and Futures Literacy approaches, applied in the framework of future studies. The authors of the paper propose to use them for the development of future-oriented competences that allow one to better cope with the future labour market.

The paper aims to discuss the legitimacy of applying foresight and Future Literacy approaches for the needs of shaping future-oriented competences. It attempts to answer the following research questions: (1) What are the expected changes of competences required on a future labour market? and (2) Is it justifiable to apply modern anticipation approaches, namely, foresight and Futures Literacy, to respond to the current needs generated by dynamic changes in the environment, characterised by high unpredictability and uncertainty for the needs of shaping future-oriented competences?

The paper is structured as follows: After indicating dynamic changes on the labour market and stressing volatility, uncertainty, complexity, and ambiguity of the world, the authors state the need to shape future-oriented competences and suggest that it could be enhanced by applying foresight and Futures Literacy approaches. The state of the art analysis is conducted with respect to two areas. Firstly, the authors indicate key competences of the future that are emphasised by researchers and practitioners. It shows that coping with uncertainty and volatility is an important aspect. For this reason, the authors focus their further research on the use of foresight and Futures Literacy approaches that are known to deal with uncertainty. Next, the authors discuss, against the background of the state of the art analysis and basing on their experience in conducting foresight and Futures Literacy projects, if it is justifiable to apply these modern anticipation methods for the purpose for developing competences of the future. The conclusions comprise the main results, indicating that the tools in question can be successfully applied to shape future-oriented competences, which respond to the current needs generated by dynamic changes in the environment, characterised by high unpredictability and uncertainty.

## 1. Method

The paper concerns changes in competences as a result of dynamic turbulences and uncertainty in the world directly influencing labour market needs. Competence is understood as a set of knowledge, skills, and attitudes (Bacigalupo et al., 2016). While taking into account the

present changing conditions of life and work, key competences are understood as including, among others, the aspect of "the ability to cope with uncertainty and complexity" (Schola Europaea, 2018). When we mention uncertainty, it is understood as "a situation which involves imperfect and (or) incomplete information, and which affects the predictability of outcomes" (Bacigalupo et al., 2016). Uncertainty and the lack of continuity are among the most important features of many areas of social and economic life, especially while taking into account the forward-looking context. To be able to reduce the uncertainty in a complex volatile environment, it is justifiable to focus on the future with the use of foresight (Magruk, 2017) and Futures Literacy (Miller & Sandford, 2018).

Foresight is a well-established tool used, among others, for developing shared long-term visions, generating research priorities, scanning future threats and opportunities, and for formulating future-oriented long-term strategies (Barré & Keenan, 2008; Poteralska & Sacio-Szymańska, 2014). "Foresight is one of the significant scientific considerations for the future that take into account the conditions of uncertainty and treat research objects (country, region, company, society, etc.) in a systematic way" (Magruk, 2017). It means a systematic look into the future, enabling the identification of strategic research and drawing conclusions for the present (Irvine & Martin, 1984; Cuhls, 2003). When we take the forward-looking context, it is justifiable to analyse Futures Literacy – a practical skill that can be described as the capacity to identify, design, target and deploy anticipatory assumptions (concerning the aspect how one imagines the future) (Miller & Sandford, 2018; Miller, 2019). "Futures Literacy is one way to sense and understand change, because the identification of anticipatory assumptions and the related imaginary futures generates clearer differentiation of endogenous changes that pertain to systemic continuity from exogenous changes that may be 'weak signals' of systemic discontinuity" (Miller & Sandford, 2018).

Thus, the first step of the literature review includes an indication of the key competences of the future, selected as a result of the research conducted so far by scholars and practitioners. The authors analyse reports of recognised international organisations, such as the OECD, JRC, WEF, and search the Web of Science database. While searching WoS, the criteria "future of work" and "future competences" are applied. In the first stage, abstracts were read and the whole papers were roughly reviewed. Among them, 98 were initially analysed, and out of them, 43 were selected for detailed reading. They include the papers devoted to the topic of competences important in the future, but not too detailed and not referring to individual professions.

Foresight and Futures Literacy are known approaches to deal with the future. Therefore, the second stage of the literature review is the analysis of experience and examples of applying foresight and Futures Literacy with respect to the topic of the future of work. The authors

search the Web of Science database and use the criteria: "future of work, foresight" and "future of work, Futures Literacy". After the reading of the abstracts and a cursory look at the papers, 58 papers were analysed in more detail, out of which 34 were selected as the final base for the state-of-the art analysis.

Next, taking into account the literature review results and having in mind the authors' experience in conducting foresight and Futures Literacy projects, the legitimacy of using foresight and Futures Literacy to shape the competences of the future is discussed. The paper ends with a conclusion that the analysed future studies approaches are appropriate for shaping future-oriented competences and preparing for functioning in the future characterised by uncertainty and volatility.

## 2. State-of-the art

The state-of-the art analysis is focused on identifying the key competences of the future and analysing the aspect of applying foresight and Futures Literacy approaches in the context of the future of work (Figure 1). Firstly, the authors focus on the indication of the key competences of the future, selected as a result of the research conducted so far by scholars and practitioners. Two sources of information are considered: reports issued by recognised organisations, namely, the World Economic Forum, Organisation for Economic Co-operation and Development, and Joint Research Centre, and research papers indexed in the Web of Science.

As a result of literature review, a competences mismatch and skills gaps are indicated as already observed and predicted as to be intensified in the future (World Economic Forum, 2020). Competence gaps are noticed between competences developed in education and the market demand (Kamprath & Mietzner, 2015; Haukka, 2011).

The scholars and practitioners indicate the increasing importance of soft skills. Klowden and Lim (2021) mention that future competences will comprise two categories: STEM (Science, Technology, Engineering, and Maths) and creativity and empathy. Creativity is also stressed by Sala et al. (2020), who emphasise that creativity enables individuals to question assumptions and re-evaluate problems, thanks to taking into account different variables and a willingness to take sensible risks. Felder et al. (2019) indicate the need of cognitive and meta-cognitive skills in the perspective of 2030, including critical thinking skills, creative thinking, problem-solving skills, reflective thinking, responsible decision-making, self-awareness, perspective-taking, and flexibility. Flexibility, also stressed by Sala et al. (2020), is understood as an ability to manage transitions and uncertainty and to face challenges.

Employers predict that the profile of the ideal employee will transform. Competences, such as cooperation skills, stress resistance, time management skills, willingness for continuous development, creativity, interpersonal skills, empathy, and adaptability will increase in importance (PARP Report, 2020). The top skills indicated by employers as of increasing significance in the coming years comprise critical thinking, problem-solving, and skills in self-management, such as active learning, resilience, stress tolerance, and flexibility (World Economic Forum, 2020). According to the employers, apart from specific professional skills, the ability to function in business in conditions of uncertainty, which in turn results from extremely dynamic changes in the environment, is more and more valuable. Stress management skills and the flexibility to respond to unexpected events are also becoming more and more important (Dębkowska et al., 2022). A group of skills indicated emphasises the ability to function in the future that is unknown and turbulent. Future literacy, adaptability, and exploratory thinking are stressed with the European sustainability competence framework (Bianchi et al., 2022). A competence "Vision" aimed at work towards a vision of the future is indicated within EntreComp (Bacigalupo et al., 2016). It covers detailed aspects aimed at the following: imagining the future, developing a vision to turn ideas into action, and visualising future scenarios. The objective is to be able to create visions of the future and show their benefits during turbulent times. Another important competence concerns coping with uncertainty, ambiguity, and

| Key Competences of the Future | | Foresight and Futures Literacy in the context of the future of work | |
|---|---|---|---|
| Aspect | Authors | Aspect | Authors |
| Competences mismatch, skills gaps | Klowden & Lim, 2021; Sala et al., 2020; Felder et al., 2019; PARP Report, 2020; World Economic Forum, 2020; Dębkowska et al., 2022 | Copying with uncertainty and discontinuous change with reference to the future of work | Laukonnen et al., 2018; Millar et al., 2018; Keller et al., 2015 |
| Ability to function in the unknown and turbulent future | Bianchi et al., 2022; Bacigalupo et al., 2016; Future of Education, 2018 | | |

The soft competences of employees will be of key importance in the future, as they enable one to cope with uncertainty

Foresight and Futures Literacy are appropriate tools for shaping competences needed in the uncertain future

Figure 1. The scope and conclusions of the state-of-the art analysis (source: Authors)

risk, which refers to dealing with complex challenges and handling a constantly changing environment characterised by a high degree of uncertainty (Bacigalupo et al., 2016). The OECD report (Future of Education, 2018) distinguishes competences that give young people a sense of being innovative, responsible and conscious, calling them "transformative competences". They include creating new values (based on innovation, adaptability, creativity, curiosity, and open-mindedness), reconciling tensions and solving dilemmas (taking into account the interests and values of others), and taking responsibility (requiring intellectual and moral maturity).

Thus, a need to be equipped with skills to cope with the changing conditions is emphasised both by scholars and employers.

The conducted analyses also concern the subject area of personal development courses. An increase in 2020 in comparison to 2019 in the popularity of courses enhancing soft skills, namely, developing self-management skills versus those developing technical skills has been observed (World Economic Forum, 2020). It has also been noticed that formal upskilling and reskilling seem to be more closely focused on technology use and design skills in contrast to emotional intelligence skills, which are less frequently targeted within formal training (World Economic Forum, 2020). While taking into account the importance of soft skills and insufficient formal training in this area in practice, there is a need to propose an approach supporting soft skills enhancement, among others, referring to creativity and skills connected with dealing with uncertainty and the changing environment.

As a result of the first stage of the literature analysis, key future-oriented competences are indicated. It is observed that, irrespective of the obvious professional, technical competences strictly related to the type of work, the soft competences of employees will play a crucial role, as they enable employees to cope with conditions of uncertainty. Soft skills are gaining an increasing importance in the fast-changing global environment (Sala et al. 2020).

Due to the fact that the competences of the future will differ from those preferred at present, in the opinion of the authors of the paper, it is justified to propose foresight and Futures Literacy approaches in order to shape competences of the future, as well as to prepare employees for functioning in the future characterised by uncertainty and volatility.

Thus, in the second stage of the literature review, scientific articles from the Web of Science are analysed to see how foresight and Futures Literacy are used in the context of the future of work.

In the scientific papers devoted to the use of foresight and Futures Literacy in the context of the future of work and enhancing future-oriented competences, it is noticed that these aspects are linked to the uncertainty and discontinuity of changes. It is inevitable that new competences are needed because of dynamic changes in the environment and the necessity to cope with uncertainty. It has been stressed that at the moment only a human has this unique skill to be able to cope with uncertainty (Laukonnen et al., 2018).

To be successful in the current unpredictable and challenging 21st century, it is essential to possess and update adequate competences, i.e., to enhance agility, flexibility, and resilience (Millar et al., 2018). Among the suggested areas that help enhance these competences and that should be developed in order to enable functioning in the VUCA world are, among others, strategic foresight, capacity building, and venturing under uncertainty (Millar et al., 2018). The importance of foresight is emphasised, because engaging in foresight enables one to face discontinuous change (Keller et al., 2015). However, on the other hand, a need for further development of foresight as a way of coping with the VUCA world and a need for supporting foresight with new skills are indicated. The application of foresight and Futures Literacy approaches should be supported by new skills and tools (Millar et al., 2018).

## 3. Discussion

The conducted analyses show that rapid changes anticipated in the future of work already influence the needed competences and will have significant implications for the education and training (Felknor et al., 2020) (Figure 2).

It is of key importance to prepare the next generation of employees for the rapidly evolving world of work (Hennigan et al., 2020). Current and future employees need to "learn how to learn", in order to acquire new competences to adapt to ever changing job opportunities (European Commission, 2015). They need to apply their knowledge in an unknown and changing environment (Future of Education, 2018). To meet this challenge, a

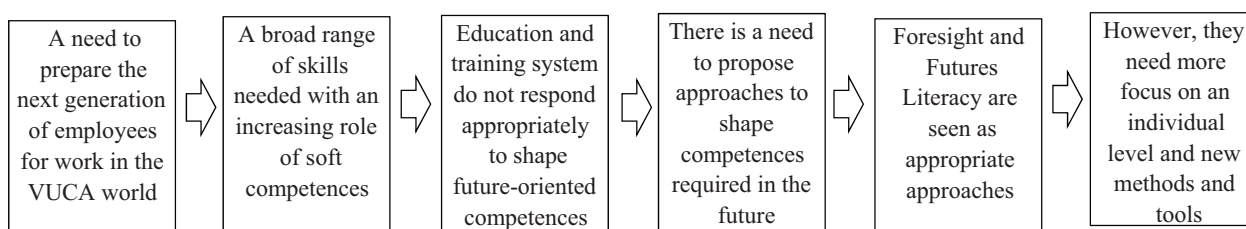| A need to prepare the next generation of employees for work in the VUCA world | A broad range of skills needed with an increasing role of soft competences | Education and training system do not respond appropriately to shape future-oriented competences | There is a need to propose approaches to shape competences required in the future | Foresight and Futures Literacy are seen as appropriate approaches | However, they need more focus on an individual level and new methods and tools |

Figure 2. The legitimacy of applying foresight and Futures Literacy approaches for developing future-oriented competences (source: Authors)

broad range of skills with an increasing role of soft competences is required.

However, both the education systems and formal training system often do not respond appropriately to shape future-oriented competences. Within the education system, the lack of the awareness of the philosophical approaches to foresight and futures studies among education practitioners is observed (Beni, 2018). Formal training organised at enterprises is often focused on developing technical competences (World Economic Forum, 2020). Thus, there is a need to propose approaches to shape the competences required in the future. Scholars and practitioners agree that these competences are both technical and similarly important soft ones. Soft competences are already becoming more important, and this tendency will be maintained in the future. Amongst the future-oriented competences, one should mention the following: creativity, problem-solving, and dealing with uncertainty and with the changing environment. They can be effectively shaped, thanks to the use of foresight and Futures Literacy. Some workshops with the use of these approaches are presently being organised to shape the skill of coping with uncertainty (Forte et al., 2020).

Moreover, foresight can be and is already used to enhance creativity. As an example, here the design of the ACTVOD workshop method that would encourage creativity can be mentioned (Lauttamaki, 2016). Scenario-building exercises, arranged with the use of foresight methods, enhance particular individual abilities that are necessary for anticipatory strategic management. Anticipatory strategic management includes elements such as proactivity, creative problem-solving, and foresight competences (Bourmistrov & Amo, 2022). Kamprath and Mietzner (2015) state that the education of creative professionals needs a sustainable foresight. Foresight may facilitate the process of learning and acquiring competences – in this case, the competence of creativity – agreed as one of the key future-oriented competences and the competence of proactivity (Bourmistrov & Amo, 2022). Participants are provided with tools that enhance their creative capacity, which are emancipated through foresight skills (Bourmistrov & Amo, 2022). Here it should be emphasised that foresight is mainly focused on the strategic organisational level (Keller et al., 2015) and the individual level of employees and professionals within the firms is often neglected (Kamprath & Mietzner, 2015). However, they are sometimes interconnected. Bourmistrov and Amo (2022) analyse under what conditions the foresight process, understood as an organisational process of intervention, can enhance learning processes which, in turn, can contribute to the development of new skills at the individual level, in this case, skills such as creativity and proactivity. Rieckmann (2012) stresses that individuals should be empowered to act in complex unknown situations. Kamprath and Mietzner (2015) emphasize the need to develop a perspective in foresight that focuses more on the individual level.

Taking into account the necessity to change the education and training system of current and future employees to meet new professional challenges in the dynamically changing labour market, it is required to adapt new methods and interdisciplinary tools, especially these that help to cope with the unknown and changing environment. Methods that deal with uncertainty also allow shaping future-oriented competences, e.g., creativity, problem-solving, and coping with uncertainty. In this area, foresight and future literacy approaches can be successfully used, while taking into account that they should also be equipped with new methods and tools.

## Conclusions

The life and work of current and future employees is influenced by the rapidly changing world of work, a volatile environment, the discontinuity of changes, and high uncertainty (Garcia-Garcia et al., 2021; Hennigan et al., 2020; Schulte et al., 2020).

The application of foresight supports the determination of future-oriented competences, creating visions of the future, and making a conscious, theoretically best choice between different variants of the future, only one of which will arise. But foresight can also be successfully used to develop competences that will be needed in the future, for example creativity and dealing with uncertainty. Here attention should be paid to the need to strengthen the development of competences at the individual level.

In turn, the Futures Literacy approach should be used to stimulate more conscious thinking about the future and a critical look at one's visions and assumptions about the future. Futures Literacy enables one to develop creative and abstract thinking and go beyond what is only planned, reasonable, probable, possible, and feasible. Thanks to this, it helps one to prepare for an uncertain future, i.e. it equips one with future-oriented competences.

Therefore, both foresight and Futures Literacy enable the development of competences necessary to function in a changing environment, including developing creativity, dealing with uncertainty, and supporting decision-making.

The use of modern approaches to future anticipation, namely, foresight and Futures Literacy, responds to the current needs generated by dynamic changes in the environment, high unpredictability, and uncertainty, and allows for shaping the competences that are needed to function in such a turbulent VUCA environment.

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