



Future Skills in Education: Psychologists' Views on the Skills of the Future from the Perspective of Individual Well-Being

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Abstract:

One of the contemporary challenges of education is to prepare children to deal with problems that they will face in adulthood – but many of these problems are not yet known. To address this situation, frameworks for education have been developed relating to the skills needed. Most of these frameworks focus on the presumed needs of the future labour market. This paper describes a survey in which future skills were examined in terms of the individual's ability to lead a successful, balanced and fulfilling life. During the survey, we reviewed the relevant frameworks (based on the relevant literature) and conducted interviews in five countries with psychologists familiar with children's cognitive and affective development about the challenges that can be expected. In the light of these interviews, it was possible to outline the skills that would need to be developed between the ages of 6 and 10, and – based on these skills – to formulate the expectations that development activities should meet. The main goal was to outline the frames of skill development in the light of an unpredictably changing social, cultural and technological environment. This work undergirded our further task: to elaborate a methodology and a toolkit to match the development objectives.

Keywords:

skill development, future skills, future challenges, well-being

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Introduction

One of the most important tasks of teachers is to prepare their students for a successful, satisfied and balanced adult life. However, this is also a major challenge in a rapidly changing cultural and technological environment, where it is increasingly difficult to know what kind of society and jobs today's learners will have to cope with in 15–20 years' time, and what expectations they will have to meet in their professional and personal lives. Teacher training is in an even more difficult position and should therefore look even further ahead, as it must take all this into account when preparing the teachers of the future. To put it a little more bluntly, training should prepare students to deal with problems that are currently almost out of the reach of teachers. In recent years, rapid social and technological change – and in particular, the transformations brought about by the dominant presence of the digital environment – has already had an impact on education, raising the need for teacher education not only to follow this change, but also to anticipate and prepare future teachers to adapt rapidly.

Several aspects of the problem need to be considered. On the one hand, in line with current educational policy preferences, there is a need to take into account labour market needs and their likely changes, and the fact that future generations may undergo several occupational changes in their lifetime. They will have to adapt to the decline or even disappearance of their original occupation and may have to prepare for radically new occupations along the way. In fact, this is not a completely new phenomenon, as the concept of life-long learning has been part of the pedagogical landscape for decades, and a look at the range of professions of two or three decades ago, or for example, at the range of courses on offer at university level, reveals a radical change compared with today. On the other hand, pedagogical preparation can also be approached from an individual perspective: it requires the acquisition of knowledge and skills that are the basis for individual success and better fulfilment. For instance, the focus can be on the skills that underpin social relationships, advocacy, successful communication, or even professional progress. Thirdly, by focusing on the individual, pedagogical objectives can also aim at a balanced and satisfied life, and rightly so: a rapidly changing environment can present personal challenges for individuals that can threaten their mental health and well-being. In this context, reference can be made to the concept of resilience, which has become fashionable in recent years, or to the skills needed to maintain stable social relationships, and a healthy work-life balance.

While it is possible to identify the focus of these aspects, it is important to note that this is not the primary task. Rather, the different domains highlight the fact that a range of approaches can be applied here, while in each case a range of skills and competences can be outlined and grouped according to the aspects chosen. For example, it may be important to distinguish between

groups of 'hard' and 'soft' skills. Hard skills are usually those that are learned, directly applicable to everyday life or to the exercise of a profession: like, for example, the ability to do arithmetic or to drive a car. Soft skills, on the other hand, are more general and less related to knowledge elements: skills related to communication, social relations or even group leadership. An important difference between the two sets of skills is that soft skills can be developed rather than acquired through knowledge. It is also worth highlighting transversal skills, which are easily transferable from one area of activity to another (the focus of the present survey was on these skills).

The issue of the skills needed for the future goes beyond pedagogy, of course, and influences education and employment policy choices. The primary concern in these decisions is to shape and meet the needs of the labour market, and their preparation is currently focused on outlining the possible effects of increasing automation and the expansion of the use of artificial intelligence in different occupations. This research seeks to look at the challenges of reversing the usual approach and putting the individual at the centre. How can pedagogy help individuals to build a balanced, active and successful life in changing circumstances, both in their careers and in their personal lives? Our hypothesis is that transversal skills can play a prominent role in this area.

In order to map the area of skills to be developed, we first reviewed the available literature and interviewed psychologists working on children's cognitive and emotional development in five European countries. The aim of the interviews was to identify the skills that are central to managing a rapidly changing cultural-technological environment - from the perspective of the individual. The survey also included an overview of development opportunities for children aged 6–10 years. The framework of skills outlined in the following outline has guided further work to develop methodological recommendations and tools for teachers to use in school education and training (to be published in a forthcoming paper with a practical focus).

Future Skills: the Background

A number of recommendations have been made on what skills should be built into schooling for the next generation, based on an extension of current trends and an analysis and interpretation of the impact of environmental change on people. UNESCO has made recommendations on what skills development will be needed to promote an adaptive future society, and what future literacy should look like. In this, complexity and diversity are primary considerations, as multiple narratives of the future can be outlined, and these are based in large part on the complexity of social and technological processes (Miller, 2018; UNESCO, 2019, 2020). These recommendations are useful primarily as a framework that provides key concepts and focal points for planning future pedagogical tasks.

The UNESCO Recommendation's framework of transversal competences is structured according to six main groups: media and information literacy, intrapersonal competences, interpersonal competences, critical and innovative thinking, global citizenship, and a group of competences not classified in the former (Care & Luo, 2016). The framework also identifies priority areas for school development.

In 2020, the European Union has set up an agency to coordinate skills needs under the name Skills Lab, which will continuously assess the needs in the member states, enabling a rapid response to labour market demands (European Training Foundation, 2020). The Skills Lab envisages that meeting the challenges of the future will require a high level of creativity, innovation, experimentation and innovation, based to a large extent on collective intelligence. The society of the future will rely on the diversity of its members (diversity of mindsets and literacies, as well as cultural complexity) and on the ability to act cooperatively. Partly as a consequence of the work in the Skills Lab, the EU has designated 2023 as the European Year of Skills, declaring that a future-oriented society will foster the development of skills and competences that will be useful for its members in the long term (European Union, 2023; Brandi et al., 2023). To this end, the EU is continuously coordinating research on skills and adapting the recommendations of the skills framework.

Also in response to the needs of the labour market, the European Commission has developed the European Skills, Competences, Qualifications and Occupations (ESCO; European Commission, 2020a) framework, which attempts to standardise the conceptual framework of skills required for different occupations and professions, by preparing a set of skills in all the official languages of the European Union, by establishing a table of equivalence, by creating a system of categories for classification and by describing the relationships between skills. The system is continuously updated. In terms of labor market needs, this framework is based on the World Economic Forum's 2015 recommendations (Table 1), which identify the main groups of skills to be developed for the education of the future (WEF, 2015).

Table 1

*Framework of the 21st-Century Skills According to World Economic Forum
(Source: WEF 2015)*

Literacies	Competencies	Qualities
Literacy	Critical Thinking	Curiosity
Numeracy	Problem Solving	Initiative
Scientific Literacy	Creativity	Persistence
ICT Literacy	Communication	Adaptability
Financial Literacy	Collaboration	Leadership
Cultural and Civic Literacy		Social and Cultural Awareness

The framework of European Commission can be linked to the complementary LifeComp competences framework, which does not focus on the labour market but covers, in a general sense, the core competences necessary for personal fulfilment, social life and learning (when interpreting the terms 'skill' and 'competence', it is important to bear in mind that the ESCO framework does not definitely distinguish between the two). The LifeComp (European Commission 2020b; Sala & Cabrera Giraldez, 2022) describes nine key competences in three groups of three (Table 2): self-regulation, flexibility, well-being (for personal fulfilment), empathy, communication, collaboration (for social relationships), growth mindset, critical thinking, and managing learning (for continuous learning). It is worth noting that grouping according to different criteria highlights the interrelationships between skills and the intersections between different areas.

Table 2

The LifeComp Framework

(Source: European Commission 2020b)

Personal area	Social area	Learning to learn area
Self-regulation	Empathy	Growth mindset
Flexibility	Communication	Critical thinking
Well-being	Collaboration	Managing learning

In addition to the formal frameworks, a number of other proposals have been made to define the skills needed for the future. Kotsiou et al. (2022), after examining almost 100 frameworks of future skills, classify the skills that need to be focused on in a future-oriented education into nine meta-categories: higher-order thinking skills, dialogue skills, digital and STEM literacy, values, self-management, lifelong learning, enterprise skills, leadership and flexibility. It is striking that some of the skills in the meta-categories are more from the soft skills domain and are areas that focus more on the labour market and personal career development again. It is also worth noting the substantial overlap between the frameworks: each takes into account expected diversity and rapid technological change.

One of the key focuses of the frameworks is addressing anticipated labour market challenges. There is no doubt that the social role of education requires it to contribute to the effective management of future socio-economic changes and to the overall success of society. At the same time, when educating children, it is not only important to develop the skills needed in the labour market, but also to develop the skills necessary for personal happiness. It is therefore worth considering additional factors when identifying areas for development.

First, it is necessary to develop skills that ensure mental and emotional health (Adelman & Taylor, 2000). Skills necessary for personal happiness,

such as emotional intelligence, stress management, and self-awareness, help children to be in a healthy mental state and to be able to maintain it as adults (Wei et al., 2024). Developing a stable emotional balance can prevent burn-out and mental illness, which can hinder personal fulfilment as an adult. Related to this is the increasingly important skill in modern society of balancing work and private life. Schools need to start developing the skills that will help them maintain a balance between workplace expectations and personal happiness later in life (avoiding burnout, for example). Similarly important from this perspective is the internal motivation that comes from personal happiness: children who learn how to find joy and purpose in their lives are more likely to be passionate and persistent in their work. This also increases the chances of long-term success and satisfaction.

Second, social relationships play a key role in achieving and maintaining personal happiness. The skills needed to build and maintain relationships, such as empathy, cooperation, and direct communication, are not only important in the labour market for effective and successful teamwork, conflict management, and cooperation (Belfi & Borghans, 2024; Priamikova, 2010). These skills also lead to satisfaction and happiness in personal life and help build stable social relationships (Siddiqui & Ventista, 2018). A balanced social life also helps with self-actualization, a healthy lifestyle, and inner harmony. Skills such as positive thinking, mindfulness, and positive evaluation of peers help children strive for happiness later in life, regardless of external (or material) factors.

Third, adaptability may be important for individuals not only because of rapidly changing labour market needs. It is conceivable that in the future, most people will be forced to radically change their profession several times during their lifetime. It is not just a matter of having the skills required for the new profession, but also of being able to maintain one's identity and harmony with one's environment and community. Success based solely on professional skills can become unstable if the individual does not have the emotional and psychological tools to deal with challenges (Putwain et al., 2020). The skills necessary for happiness (e.g., flexibility, self-confidence, interpersonal skills) also help to sustain a professional career in the long term. Additional skills, such as resilience, a positive attitude, and the ability to adapt flexibly to change, enable children to be successful in an ever-changing world while maintaining their personal satisfaction (Ager, 2013).

Readers may notice that the concept of 'success' is a recurring theme in the above descriptions of skills. Currently, in most of society, the definition of success is often linked to material well-being, fame, or other external factors. However, in the context of school skills development, a broader interpretation is worth pursuing. Children need to learn a mindset that measures success not only in terms of financial or professional achievements, but also in terms of personal satisfaction, social relationships, and self-fulfilment. This approach can contribute to them living a balanced and fulfilling life later on.

Finally, it is worth noting that, as the above overview shows, the challenges of the labour market and the skills necessary for individual happiness cannot be separated by a sharp dividing line. The development of skills therefore supports both the personal well-being of individuals and society as a whole, as emotionally stable, balanced people can be more productive members of the community in the long term.

Method

This research looks at the future skills in terms of the needs of the individual. While there is no doubt that individual needs are significantly linked to societal needs, to the regeneration and renewal of society as a whole, it is considered appropriate to analyse these skills separately.

To carry out the survey, we used a qualitative method, a semi-structured interview. The interview questions were designed to give the interviewee the opportunity to add their own insights on each topic – this was considered essential in order to get a more complete picture of the area during the interviews. The method also gave the interviewee sufficient freedom to express her/his own thoughts on the topic. The interview questions were grouped into three main categories. In the introductory section, the objectives of the interview and the survey were explained, then the changes expected in the next 15–20 years and the factors influencing children's development were discussed. In the second part, we focused the discussion on transversal skills: in particular, we wanted to find out which transversal skills are relevant for the future and which of these skills could be developed in the 6–10 age group. Finally, the third part focused on didactic tasks: with the help of psychologists, we looked at the STEAM area, which is emphasised in frameworks. Connected to this topic, the role of different games and activities in developing skills were discussed.

We asked psychologists from five countries to participate in the survey: Belgium, Cyprus, Hungary, Italy and Romania. The aim of the interviews was not to explore psychologists' general perceptions in the field, but rather to help identify appropriate (even specific) aspects of transversal skills development in the first four years of schooling. The diversity of the interviewees' cultural backgrounds facilitated the inclusion of different perspectives and approaches. It was not intended to get a finalized list of skills that is fully generalisable; rather to identify convergent points.

The interviewees were selected according to uniform criteria in all five countries. We sought out professionals who had extensive knowledge of the cognitive development characteristics of the given age group and who had distinguished themselves in the development of skills in their work. However, it was not a requirement that they have school or teaching experience; during the interviews, we were specifically interested in their experiences in psychological practice in relation to the skills under investigation (questions relating to the field of education will be the focus of another phase of the survey).

An important element of the method was that the interviewees received the questions in advance and were able to obtain information about the topics from their colleagues beforehand. This step certainly highlighted the differences that arose from the socio-cultural background and technological development of each country, as well as their attitudes towards technology. However, when processing the results, we also sought to compile a general list of the most important skills, independent of cultural differences, in order to identify central areas for skill development.

When processing the results, we compiled a list of skills highlighted by psychologists based on written transcripts of the oral interviews. In doing so, we also took into account the specific characteristics that arose in the definition of the skills. This step was highly helpful for outlining the conceptual framework for further work.

Findings

As regards future changes, psychologists' views are largely in line with those expressed in the literature and in official recommendations. Automation, robotisation and the widespread use of artificial intelligence will have a profound impact on the lives of future generations, and children of school age today will have to cope with the resulting difficulties as adults. Loneliness will be a problem as direct (face-to-face) social contact and communication with artificial agents becomes more and more widespread. However, there are also other phenomena that could potentially pose a threat: the cultural diversity of the environment means that social interaction requires skills in intercultural communication, and the unequal status of minorities (not only ethnic or religious, but also subcultural, gender, age or any other kind of minority) could affect the lives of the next generation. All of these phenomena, combined with the unpredictability and uncertainty of the future, can lead to emotional instability and anxiety in adult life.

However, difficulties are not only a disadvantage: as the Cyprian interviewee pointed out, coping with difficulties makes you more resilient and may even be an advantage for the generation concerned. To this end, school development should not provide a full-protected environment, but opportunities to learn coping skills. In line with this, our Italian interviewee sees the problems of the future as an opportunity rather than an obstacle. If these ideas are applied to the challenges facing school education, the most likely conclusion is that an open, flexible education system could provide the necessary skills development – as the Romanian interviewee specifically put it.

This conclusion is echoed in the reflections which, alongside the vision, also outline the general tasks of education and development. Given that it is a question of developing skills, the focus should be on personal experience rather than material knowledge. As emphasised by the Belgian interviewee, this should include active learning (research, experimentation, exploration, observation, rep-

etition, automation), but should also include opportunities for reflection. The learning environment should be organised accordingly, not too complex but not too simple, to ensure a richness of stimuli, and should always offer the learner choices. These parameters also serve to ensure that education is geared to individual needs: each learner has an individual development path and teachers must therefore take account of individual differences in development.

The opinion on transversal skills had different emphases in each interview, but in most cases, they were related to each other (in some cases only the wording was different). It was suggested that the UNESCO framework (see Care & Luo, 2016) provides a very good reference for assessing transversal capabilities. As the need to acquire new knowledge is expected to grow in all walks of life in the future, the development of learning to learn will be a priority. This challenge is also linked to the need to deal adequately with the specificities of the socio-cultural environment, which requires the development of language skills, even the knowledge of several languages, and the routine use of intercultural communication. Also linked to the social environment is the capacity for active democratic participation, which also strengthens the bond between the individual and society. Interviewees also highlighted self-awareness and problem-solving skills (Belgium) and emotional intelligence and creativity (Romania).

During the interviews, participants were asked to indicate some of the skills they considered most important. The table below shows the results (Table 3).

Table 3

Skills Highlighted by Interviewees (rows help to put each skill in context beyond the matches)

	BE	CY	HU	IT	RO
1	flexibility, multidisciplinary	adjustment, adaptability, flexibility		convergent and divergent thinking	flexibility
2		self-awareness	conflict management		social learning, mentalization (social skills)
3	perseverance	self care	frustration and stress management		
4	openness	independence		creativity	curiosity, openness
5	critical thinking		problem solving	problem solving	problem solving
6	connectedness, motivation		communication	communication	competition, cooperation
7	empathy		emotional regulation, control	emotional intelligence	

As can be seen from the table, the interviewees tended to focus rather on one area: some emphasised the cognitive area and others more the personality-related skills. However, some general directions stand out strongly. One is that skills related to emotional stability and regulation (self-care, emotional intelligence, empathy, stress management) in certain form emerged in almost all interviews. Similarly, the identification of skills linked to learning processes (interest, adaptability, openness, flexibility, multidisciplinary) is a recurrent element. Thirdly, skills related to the problem-solving group (convergent and divergent thinking, critical thinking, creativity, conflict management) were highlighted.

The development tasks are determined by the skills that can be successfully developed in a given age group (6–10 years). The interviews revealed that individual differences play an important role in this: each child's developmental path and pace may be different, to which the teacher has to adapt. At the same time, developmental theories do provide a basis for establishing skills. It is generally accepted that it is not possible to develop skills related to logical thinking before the age of about 7, so it is not worth focusing on critical thinking and problem-solving skills before this age. Although, according to Piaget's (1972) theory, the formal operational stage of development necessary for abstract thinking can only be discussed from the age of 11, the foundation of skills begins at the concrete operational stage; in the case of the age group concerned, this is what should be aimed at in the development of problem-solving skills, and not actual abstraction or logical modelling.

This idea is also reflected in the development of emotional regulation skills. Empathy, compassion and cooperation with others are more likely to be successfully developed after the age of 7–8, but they can be established earlier. Development should take into account a gradual approach, as the Hungarian interviewee gives an illustrative example: the ability to regulate emotions requires first the recognition of emotion, followed by the identification of emotion, then a further developmental step of communicating emotion, and finally the actual regulation of emotion.

However, it is worth stressing again that a clear age distinction is not possible due to individual differences. On the basis of the interviews, it is more appropriate to follow the principle that the teacher chooses the method and means of development according to the needs of the pupils.

As the third part of the interview showed, similar specificities can be taken into account in STEAM development. As the interview in Romania showed, children of the age under study do not yet divide their world of interest into disciplines, they explore problems in their own complexity: in this task, children's natural curiosity guides them. The teacher can therefore take advantage of the diversity of problems, the benefits of a multidisciplinary approach and the different approaches, such as well-constructed tasks that help children to gain their own experience. However, care should always be taken to place the task in a clear context and to ensure that the different

tasks support each other during the development. The Cyprian interviewee pointed out that these objectives can be achieved mainly through real-life problems, which can focus the attention of this age group.

The multidisciplinary approach of STEAM is reinforced by the fact that a strict scientific approach can be combined with a creative (artistic) attitude. The Hungarian interviewee also pointed out that STEAM development can include mindfulness exercises to help develop general, transversal skills. Playful exercises were also mentioned by the interviewees as an important element in this context, which leads to didactic considerations.

Also in the third part of the interview, the psychologists were asked to recommend didactic methods, tools and learning activities to develop skills. Play was mentioned in several of the interviews: the Belgian interviewee stressed the importance of free play (games are often too bounded, following a set of rules that children cannot influence), the Italian interviewee referred to the importance of group games in which children can build cooperation, and the Romanian interviewee suggested that it might be useful to use a mix of traditional and digital games.

In terms of methods, project-based and problem-based learning were the main approaches used. As already mentioned, tasks should be based on real-life situations; however, it should also be considered that tasks should not always be directed towards a specific goal, but should be open-ended tasks, thus encouraging exploration. The Italian interviewee mentioned that, in addition to the pedagogical tasks, it is also worthwhile to include complementary group activities, taking advantage of the potential of art or movement to help with emotion regulation. In several interviews, it was suggested that this could also be achieved through stories, which could be worked on in a group setting.

Finally, the role of psychoeducation, which was highlighted by the Cyprian interviewee, should be highlighted. For teachers to be effective in developing children's skills, they need to own them – that is, they need to have their own experience of what they are teaching and developing. They also need to know the processes through which they can communicate them well. In the future, teachers will therefore need to become more familiar with the psychological aspects of development tasks.

Discussion

Schools have a responsibility to prepare students for a complex cultural-technological environment and a future that is difficult to predict, by developing the necessary skills. The teacher education of the present must take on the task of providing teachers who are oriented to the challenges of the future. This survey aims to provide a new starting point for more successful teacher training.

Examining the cultural and technological changes of the future, the interviews conducted in the five countries highlight the importance of focusing

on personal well-being, balanced and satisfied living – or more generally: on the individual, her/his life prospects and personality development – in addition to the transformation of the labour market. The issues raised by psychologists provide information for educators in particular on the skills development that should be focused on for today's 6–10-year-olds in order to ensure that their personal life prospects are still good 15–20 years from now. The survey is only a first step in this direction: further task is to provide teachers with the right support for their development goals. The next step is to develop good practice methods and pedagogical tools that can be applied in formal and informal learning, within and beyond the institutional framework.

Interviews with psychologists highlighted that education today must focus on skills that promote adaptation to a rapidly changing social, technological, and cultural environment. In this regard, the interviews largely confirmed the initial assumptions of the survey. Based on the discussions, it can be concluded that training should aim to successfully manage an unpredictably changing environment. In order to make such a vague goal tangible for educators, it is necessary to clearly define the skills and develop the tools and methodologies needed to develop them. This is supported by the fact that the skills most frequently mentioned in the survey can be grouped around the need for flexible adaptation (e.g., openness, flexibility, multidisciplinary, adaptability, creativity, problem solving, stress management).

By reviewing the skills listed in Table 3, it is possible to compile a short summary list of the areas most in need of development. The development tools to be created in the next phase of the project, should therefore focus primarily on the skills identified in this way.

The survey has obvious limitations. The interviews were conducted in five European countries, necessarily reflecting the current circumstances and future prospects of the societies concerned. A broader generalisation is therefore impossible – but was not the aim. It also became clear from the interviews that, based on their own experience, psychologists tend to focus on cognitive skills in some cases and affective skills in others. However, it is generally accepted that a balanced and satisfied life will require a complex system of skills. As the cultural-technological environment becomes increasingly difficult for the individual to navigate, and as social diversity increases too, the development of cognitive skills is needed to make oneself understood in it (the STEAM field can help with this). However, this same complexity can also leave the individual vulnerable on the affective side, which can be prevented by developing social skills and skills related to personal well-being.

Rapid technological change may require a number of shifts in a person's life, requiring them to do radically different work and acquire new knowledge and skills. It is also worth looking at this issue from an individual perspective: radical changes in occupation can change one's personality, identi-

ty and self-image, threatening the stability of identity. Thus, well-being and a balanced life also require skills that can preserve the integrity of identity in the face of radical changes. This also needs further work – just like the development the pedagogical tools and methods that can help to provide the integrity of identity.

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