

A.A. Muldagaliyeva\* , J. Dosmagambetova , G.K. Kulzhanbekova 

Al-Farabi Kazakh National University, Kazakhstan, Almaty

\*e-mail: aizhan.mg@gmail.com

## 21<sup>ST</sup> CENTURY COMPETENCES. WHAT THEY ARE AND WHY THEY ARE IMPORTANT

The article deals with the description and analysis of what competences and personal features will be required in the future. The purpose of this article is to discuss an important issue regarding the competence that a specialist of the 21<sup>st</sup> century should have. In a world of rapid and unpredictable changes, it's vital that young people are equipped with the right skills and competences to be prepared to respond to the challenges of the society. These are the competences that are necessary for a specialist of the future: understanding situations and circumstances (Sense making); social intelligence (Social intelligence); adaptive thinking (Adaptive thinking); intercultural competence (Cross cultural competence); algorithmic thinking (Computational thinking); interdisciplinary thinking (The ability to understand concepts across multiple disciplines); design thinking (Design mind-set) and virtual collaboration (Virtual collaboration). The individuals who develop these skills are qualified as knowledge workers. They will be able to operate in changing environments, to handle non-routine and abstract work processes, to make decisions or assume responsibilities, to work and interact as a team, and they will achieve a broad and systemic understanding.

**Key words:** competence; sense making; social intelligence; intercultural; design thinking; virtual collaboration.

A.A. Мулдағалиева\*, Д. Досмағамбетова, Г.К. Кулжанбекова  
Әль-Фараби атындағы Қазақ Ұлттық Университеті, Қазақстан, Алматы қ.  
\*e-mail: aizhan.mg@gmail.com

### 21 ғасыр құзыреттері. Олар не және олар неге маңызды

Бұл мақаланың мақсаты – 21 ғасыр маманы қандай құзыреттерге ие болуы керек деген маңызды сұрақты талқылау. Жылдам және болжауға болмайтын өзгерістер әлемінде жастардың қоғамның сын-қатерлеріне жауап беруге дайын болу үшін қажетті дағдылар мен құзыреттерге ие болуы өте маңызды. Бұл болашақ маманға қажет құзыреттер: жағдайлар мен жағдайларды түсіну (Түсіну); әлеуметтік интеллекттің болуы (Әлеуметтік интеллект); адаптивті ойлаудың болуы (Адаптивті ойлау); мәдениетаралық құзыреттілік (Кроссмәдениет құзыреттілік); алгоритмдік ойлау (Компьютерлік ойлау); пәнаралық ойлау (Әртүрлі пәндердегі ұғымдарды түсіну қабілеті); Дизайндық ойлау және виртуалды ынтымақтастық. Осы дағдыларды дамытатын, осы кәсіби құзыреттіліктердің жиынтығына ие адамдар білім қызметкері біліктілігін алады. Олар қоғамның динамикалық өзгеретін жағдайында жұмыс істей алатын, стандартты емес шығармашылық шешімдер қабылдауға қабілетті, қоғамның үнемі өзгеріп отыратын жағдайларына бейімделе алатын, сауатты және сенімді, қиындықтарды бастан өткермей, кәсіби міндеттерін тез орындай алады. заман талабына жауап беру, стандартты емес және абстрактілі еңбек процестерін басқару, шешім қабылдау және жауапкершілікті қабылдау, ұжымда жұмыс істеу және өзара әрекеттесу, сонымен қатар олар кең және жүйелі ойлауға қабілетті.

**Түйін сөздер:** құзыреттілік; шешімдердің мағынасы; әлеуметтік интеллект; мәдениетаралық диалог; дизайнды ойлау; виртуалды ынтымақтастық.

A.A. Мулдағалиева\*, Д. Досмағамбетова, Г.К. Кулжанбекова  
Казахский национальный университет имени аль-Фараби, Казахстан, г. Алматы  
\*e-mail: aizhan.mg@gmail.com

### Компетенции 21 века. Что это и почему они важны

Целью данной статьи является обсуждение важного вопроса о том, какой компетенцией должен обладать специалист 21го века. В мире быстрых и непредсказуемых изменений жизненно важно, чтобы молодые люди обладали необходимыми навыками и компетенциями, чтобы быть готовыми реагировать на вызовы общества. Это компетенции, которые необходимы спе-

циалисту будущего: понимание ситуаций и обстоятельств (Осмысление); наличие социального интеллекта (Социальный интеллект); наличие адаптивного мышления (Адаптивное мышление); межкультурная компетенция (Кросс-культурная компетенция); алгоритмическое мышление (Компьютерное мышление); междисциплинарное мышление (Способность понимать концепции в разных дисциплинах); Дизайн-мышление и виртуальное сотрудничество. Люди, которые развивают эти навыки, обладают набором данных профессиональных компетенций, квалифицируются как работники умственного труда. Они смогут работать в динамично меняющихся условиях общества, обладать способностью к принятию нестандартных творческих решений, умением адаптироваться в постоянно изменяющихся условиях общества, компетентно и уверенно, не испытывая затруднений, исполнять свои профессиональные обязанности, быстро реагировать на вызовы современности, управлять нестандартными и абстрактными трудовыми процессами, принимать решения и брать на себя ответственность, работать и взаимодействовать в команде, также они способны широко и системно мыслить.

**Ключевые слова:** компетентность; смысл решений; социальный интеллект; межкультурный диалог; дизайн-мышление; виртуальное сотрудничество.

## Introduction

The 21st century is characterized by a transition to a qualitatively different state of life. We live in a world of rapid and unpredictable changes, with the pace of change accelerating and uncertainty becoming the mark of an era. What does it imply? It implies that future young specialists should be taught in a way much different from the old teaching methods, i.e. they should be equipped with critical thinking skills, ability to think, analyze and process information critically and not just mechanically absorb and remember it.

The first and foremost task of educational institutions is training graduates who are ready to face the challenges of VUCA world and lead a successful life irrespective of the world complexity.

K. Ananiadou and M. Claro argue that nowadays the goal of educational systems is to provide future specialists with a new set of skills and competences required for being successful in the ever-changing society and able to make a contribution to the development of economy and society where knowledge is considered to be the main asset. The above-mentioned skills are often considered to be the 21<sup>st</sup> century skills and competences reflecting the needs of the new models of socio-economic development compared to those of the past fitting a different mode of production, i.e. the production one. (Ananiadou, K. and Claro, M. 2009:56).

Scholars all over the world are focused on finding answers to the questions like what features the society of the future will possess, what personal qualities will be required by the future society, how these features of the future society will impact the concept of the education content, what skills and competences students and future specialists should

possess today to succeed tomorrow, and how the definition of 21<sup>st</sup> century skills and competences should be interpreted in the context of the changing world.

The University of Phoenix Research Center, as a result of a comprehensive analysis of the possible challenges of the 21st century, has identified ten types of skills and abilities necessary for a specialist of the future: understanding situations and circumstances (Sensemaking); social intelligence (Social intelligence); adaptive thinking (Adaptive thinking); intercultural competence (Cross cultural competence); algorithmic thinking (Computational thinking); interdisciplinary thinking (The ability to understand concepts across multiple disciplines); design thinking (Design mind-set) and virtual collaboration (Virtual collaboration).

This paper aims to discuss the set of skills and competences required for the 21st century and necessary for the jobs of the future since possessing the appropriate skills for the job is critical if young specialists are to remain competitive, attract the right type of industry, and are able to apply the right type of talent in this knowledge-based, innovative economy.

## Literature review

**Sensemaking.** Sensemaking is the core skill for the 21<sup>st</sup> century. The concept “sensemaking” was first introduced by Karl Weick, an American researcher in 1970.

The term “sensemaking” is explained as “understanding, recognition of situations and circumstances, the formation of meaning and meanings. Reflection is a collaborative practice in which team members share initial ideas with each other and

identify inconsistencies or gaps in their shared understanding of the causes of phenomena or solutions to problems (Odden and Russ, 2019). When making sense, team members constantly apply their existing knowledge and integrate it with new information. It is an approach to understanding collective experience in which participants gather in a friendly and safe space for a calm discussion of the situation and presentation of their own observations and hypotheses. Only after that can they talk about making concrete decisions. Deep immersion in the current situation during sense-making allows the team members to reveal hidden problems and present the current situation in the form of a multifaceted, "stereoscopic" model. Deep immersion in the current situation during sensemaking allows the team members to reveal hidden problems and present the current situation in the form of a multifaceted, "stereoscopic" model which will facilitate finding the ways to solve the questions and mend the situation.

**Social intelligence.** What is social intelligence? According to Emery N.J., humans are perhaps the most social animals. This scholar believes that people live in many different sized societies, from small, nomadic hunter-gatherer societies to cities consisting of millions of people living in close proximity and he also thinks that we form special social bonds with kin and many of us make lifelong commitments to one socio-sexual partner, represented in the shape of a marriage. (Emery N.J., 2007:116).

Social intelligence is knowledge, skills, abilities and capacity of a person to understand the behavior of other people and his/her own, act according to circumstances. Today in order to achieve success, it is no longer enough to be just a professional in your field. You also should have the ability to maintain ties with people, promote your ideas in society, and not just create them. For example, do not be afraid to put forward bold proposals and be able to explain complex things in simple words. In this regard, social intelligence becomes an important element of self-realization.

### **Materials and methods**

Communication is of a paramount importance in the course of both teaching students to become only lifelong learners and members of the ever-changing society who are able to voice their position and have a sense of responsibility towards other people. Future specialists should be able to communicate, analyze, process, and critically assess the incoming

information using various ICT tools to be actively engaged in the digital culture.

Sofia Garcia in her work mentions, that once the early stages of work with information and knowledge are complete, sharing and transmitting the results or outputs of information is very important for the impact of this work. In fact, this is a critical stage in the process that requires analytical work in itself, including processing, transforming, and formatting information and reflecting about the best way to present an idea to a particular audience. On the other hand, practical skills are needed to communicate effectively; these are linked to the use of the adequate available tools, use of correct language, and all other aspects that take the context into account to achieve an effective communication. Information and media literacy, critical thinking and communication are skills that belong to this sub-dimension. (García S., 2019:70)

Sofia Garcia in her article points out six abilities that facilitate effective communication. They are:

#### 1. Verbal and non-verbal fluency

The basic form of social intelligence is the skill to appropriately communicate with people. The first step to effective communication is the use of the right words, the ideal tone, and clear intention underlies the first step to effective communication.

#### Knowledge of social rules and roles

Knowing social rules and roles facilitates interaction with individuals who belong to different social groups, like people of different ages, countries, religion, or cultural identities.

#### 2. Listening skills

Good listening skills help to connect with other people, prevents conflict, and enables learning through dialogue. This contributes significantly to personal growth.

#### 4. Understanding how other people's emotions work

. This competency enables communication that takes into consideration the attributes and sensitivities of other people, which makes the message authentic and effective.

#### 5. Playing social roles efficiently

This ability helps people to adapt to different social environments. Having a clear idea of peoples' expectations of us in a variety of different settings reduces stress in any situation and enables more constructive interactions.

#### 6. Self-Image and impression management

This is the ability to be able to maintain a sincere demeanor that appeals to others, shows empathy, and reinforces our idea of self. (García S., 2019:70)

### Adaptive thinking.

Adaptive thinking is the new basic skill of the 21st century. Adaptive thinking is the ability to see the situation and respond flexibly to changes if necessary, maintaining psychological stability in the face of uncertainty. Adaptive thinking involves the ability to recognize unanticipated situations, quickly choose various possible responses, and identify on the best one. When this principle is used to a workplace dynamic, it indicates an employee's ability to adapt to changing work conditions. Adaptability is a soft skill which enables to rapidly learn new skills and behaviors in response to changing situations. Someone demonstrating adaptability in the workplace is flexible and can effectively respond to new and unanticipated working conditions — even if things don't go as planned. Adaptability opens up one's mind to new ideas, makes question status quo, and gives the willingness to go against convention. Adaptable people don't fear changes, as they will first construct necessary plans to handle it.

Adaptive thinking involves development of adaptive intelligence and adaptive skills. In the early 2000s, a well-known expert in the field of management psychology Gary Coulton and his staff developed the business model of adaptive intelligence. The definition of "adaptive intelligence" is understood here as a complex, multi-level system that consists of four human abilities: values, the ability to maintain emotional stability in the face of change and uncertainty, intellectual flexibility and special communication skills. This model has become widespread in Western business circles.

Adaptive skills are skills that one can develop so he/she can continue to grow and learn in his/her workplace environment. Adaptive skills can involve being resourceful and open-minded or improving one's oral and written communication. There are different adaptive skills one can build to help find continued success in any workplace.

### Intercultural Competence.

Diversity of cultures is the "currency" of the 21st century. In the era of globalization of particular importance is development of Intercultural competence. Intercultural competence means being able to efficiently operate among various cultures, able to take actions adequately, and to talk and collaborate with people of various cultures efficiently either locally or internationally. Intercultural competence is considered a strong point in the rapidly changing world where people are likely to interact with the representatives of different cultures and countries who share different values, beliefs and experiences.

Self-awareness –ability to use information about oneself in multicultural situations, to use that information in order to cope with difficult situations;

2. Self-respect- self-confidence, respect for others.

Intercultural competence includes the concept of the Interculturally competent person (IEP). In his work "A Profile of the Interculturally Effective Person" Thomas Vulpe defines IEP as the person who can "live contentedly and work successfully in another culture" (Vulpe T., 2000:6).

The following depiction will outline the broad competencies, i.e. a set of skills, competences and perspectives – and the more particular behavior attributes an interculturally effective person (IEP) possesses.

The authors distinguished the three main features of an interculturally effective person (IEP):

- an ability to communicate with people in a way that earns their respect and trust, thereby encouraging a cooperative and productive workplace that is conducive to the achievements of professional or assignment goals;
- the capacity to adapt his/her professional skills (both technical and managerial) to fit local conditions and constraints; and
- the capacity to adjust personally so that s/he is content and generally at ease in the host culture. (Vulpe T., 2000:6).

### Computational thinking.

Computational thinking is set of skills and practices that enable to navigate complex problems and a technique of learning various themes in different disciplines and a prerequisite for being fully engaged in the complex computational world of programming.

Computer mindset encloses a certain combination of skills and operations in computer and data science as well as computer mindset and programming.

Computer and data science is considered to be a separate academic subject, unlike computational thinking which is referred to as an outlook aimed at solving problems, and programming being implementation of advancing a number of guidelines that a computer will understand and accomplish.

A certain combination of skills and operations necessary for computational thinking are wider, strengthening the notions and expertise of computer science and putting them into practice under different circumstances and contexts like basic academic

subjects, for instance, the English language, mathematics, humanities, etc., and daily analytical skills.

For tutors merging computational thinking into their classrooms, we think computational thinking is best perceived as a sequence of correlated competences and expertise.

Interdisciplinary thinking. Interdisciplinary thinking is the capacity to consider multiple disciplinary perspectives concerning the phenomenon under study, sort out the strengths and weaknesses of those perspectives, and integrate the data to produce a new, more comprehensive understanding of the phenomenon.

Interdisciplinary thinking promotes liaison between the sciences and the arts, and removes barriers between disciplines that might otherwise inform and enhance one another. In a professional sphere this type of competence navigates innovation and creativity, introduces new ideas and thoughts.

According to Allen F. Repko (2014), Director of the Interdisciplinary Studies Program for the School of Urban and Public Affairs at the University of Texas at Arlington, there are four cognitive abilities that illustrate some of the benefits of interdisciplinary thinking:

They are as follows:

1. Perspective-taking involves in-depth understanding of multiple viewpoints on a given topic, including a comprehension of the differences between disciplines and their perspectives on how to approach a problem and their rules of evidence.

2. Development of structural knowledge. Allen F. Repko adheres to the opinion that it includes two elements: declarative knowledge (i.e., factual information) and procedural knowledge (i.e., process-based information), which are needed to solve complex problems.” (Repko A.F., 2014:132)

3. Integration of conflicting insights from alternative disciplines

In case when insights from a variety of disciplines are used while investigating an issue, there often arise alternative perspectives and predictions. What Allen F. Repko advises in terms of the intellectual challenge is to find ways to take into consideration all of them, which entails careful and creative thinking rather than reverting to a single disciplinary explanation. (Repko A.F., 2014:132)

4. Interdisciplinary Understanding

Allen F. Repko in his work believes that this entails seeing an issue from an array of perspectives and recognizing how each of the alternative approaches influences one another.” (Repko A.F., 2014:132)

Design thinking.

To put simply design thinking is to create convenient and useful products and services, one needs to understand the needs of those for whom they are intended. Dive deep into the customer experience, ask the right questions, and solve problems creatively with design thinking.

Design thinking is a method and process of solving specific problems that helps to understand the user, comprehend his problem and find alternative solutions. The correct translation of the word "design" in the term is designing, constructing and creating something new.

In design thinking, the most important thing is that the needs and demands of a particular person are in the focus, and not the state, organizations or managers on the part of the customer.

## Discussions

The idea of design thinking was first formulated by Herbert Simon in 1969 in his book “The Sciences of the Artificial”. Later, scientists at Stanford University developed it and founded the Stanford design school that popularized this idea. Design thinking can be used in any area where it is necessary to solve a specific problem of a particular user: from designing a business center to renovating a park area, from improving the working conditions of couriers to organizing logistics with closed borders. Design thinking is the approach based on three principles: 1. empathy: the ability to put yourself in the place of another person, to understand his feelings and emotions; 2. breadth of thinking: the ability to cover the problem both in general and in all possible details; 3. experimentation: the willingness to try, fail, and try again. (Herbert S., 1969:78)

Virtual Collaboration. In today's life situation Virtual Collaboration is an essential skill. Virtual collaboration is a convenient way people can exchange information and ideas online or when they're not physically close to one another. It is the skill that enables cooperation between members of a virtual team for cooperation through technologically-assisted communication, when the parties involved in virtual cooperation do not physically interconnect and communicate entirely through high-tech communication modes.

Video conferencing, emailing and instant messaging are the examples of tools people can use to connect with one another remotely. International teams, remote employees and distanced collaborators can use technology and virtual communication tools to simulate the benefits of in-person interaction.

Virtual collaboration has acquired special significance during pandemic of 2019-20. The importance of technology and collaboration tools was shifted to the forefront of employers' minds when the COVID-19 pandemic began. The survey shows that, during the time of test a large part of employees have adapted to virtual collaboration as stated that they have become comfortable with digital collaboration since COVID-19. (Richardson D., 2022:129)

Peters and Manz identified the four challenges that the virtual team faces in utilization of virtual collaboration. In order to efficiently overcome the above-mentioned issues the virtual team has to own the suitable set of expertise, attitudes, features, powers and means like the following:

#### Technology-related challenges

Peters and Manz describe it the following way. The team needs to have knowledge of both the nature of their work and the virtual collaboration media they choose, and select the best suited media to deal with the most suitable situation. The team also need the skill to deal with the media to overcome issues coming from the media. (Peters L.M., Manz C.C., 2007:117).

#### Cultural diversity-related challenges.

What the authors mean by this is that the team members need to have good knowledge on cultural differences between members and the knowledge of choosing the proper media to smooth these differences. The members are expected to have the skill to adjust their communication behavior and the language proficiency to achieve cultural adaptation. (Peters L.M., Manz C.C., 2007:118).

#### Geographic dispersion-related challenges.

Peters and Manz present it this way. The team member should clearly understand pros and cons of choosing synchronous and asynchronous medias to avoid issues resulted from dispersed workplaces. The skill of time and self-management of team members are also emphasized to overcome this challenge. (Peters L.M., Manz C.C., 2007:118).

#### Trust-related challenges.

Peters and Manz warn readers by saying that it is important that the virtual member build trust, because it affects the quality and amount of shared information and ensures effectiveness of collaboration. In written communication one cannot be sure about other members' commitment and it is difficult to recognize others' emotions. (Peters L.M., Manz C.C., 2007:118).

#### Time-related challenges.

Because of time-related discrepancies, members may not have enough time for performing certain virtual project tasks, for example : to process information fast. A particular challenge in virtual teams is following-through and responding at a right time because not responding could be interpreted as a lack of competence or commitment. (Peters L.M., Manz C.C., 2007:119).

In conclusion the authors Peters and Manz mention that other than these knowledge and skills, it's crucial for team members to be motivated to face these challenges. Certain experiences and characteristics of team members would also show significant effect.

### Conclusion

It should be emphasized that key competencies are universal and are applied transversely in different spheres of knowledge and life. They have an individual basis and are essential at a personal and societal level. The possession of these competencies by university graduates and young specialists will be specifically effective in delivering high-quality human recourse to the National economy of any country. Specialists of this caliber will be able to operate in changing environments, take decisions and responsibilities, successfully organize teamwork and assume the leadership functions. Unconditionally, the progress and advancement of the National economy will fully depend on specialists of such caliber.

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