

SHAPING THE COMPETENCIES OF THE FUTURE: THE IMPORTANCE OF DEVELOPING SOFT SKILLS IN HIGHER EDUCATION WITHIN THE LANDSCAPE OF INFORMATION TECHNOLOGIES

^aYURII BURDA, ^bTETIANA SAMUS, ^cEVELINA BAZHMINA, ^dOLHA BONDARENKO, ^eDMYTRO MYRNYI

^a*O.M. Beketov National University of Urban Economy in Kharkiv, 61002, Kharkiv, Ukraine*

^b*Oleksandr Dovzhenko Hlukhiv National Pedagogical University, 24, Kyiv Str., 41400, Hlukhiv, Ukraine*

^{c,d}*National University Zaporizhzhia Polytechnic, 64, Zhukovskoho Str., Zaporizhzhia, Ukraine*

^e*Zaporizhzhia State Medical and Pharmaceutical University, 26, Maiakovskoho Ave., 69035, Zaporizhzhia, Ukraine*

email: ^ascience.yurii_burda@gmail.com,

^btatiana12samv@gmail.com, ^cevelina.bazhmينا@gmail.com

Abstract: The article emphasizes that modern professional activity requires mastery of not only highly specialized knowledge but also soft skills. The peculiarities of modern society, which has passed from the VUCA state to the BANI state, are noted, emphasizing that it implies even greater turbulence and unpredictability of the environment, as well as the ever-growing role of information technologies. Today, in the labor market, "soft" skills play a key role in professional activity. Therefore, the task of higher education is to educate a professional who can realize himself in the conditions of high competition, which requires the introduction of educational technologies that form in students' soft skills with solid digital components. The article is devoted to soft skills, which are necessary for young specialists starting a professional career. The objectives of the study were: to determine the optimal composition of soft skills, most in-demand among employers; to evaluate their importance for the successful start of the professional career of young engineers; to reveal the main problems of the formation of soft skills within the educational process. Formulated conclusions can be used to improve university training of young specialists competent in the labor market in the BANI-environment.

Keywords: soft skills; university; VUCA; BANI; experimental learning; information technologies.

1 Introduction

In modern science, soft skills are viewed as universal attributes required for the subject to attain personally meaningful goals. In this context, soft skills are non-cognitive adaptable talents that complement hard skills (specific professional skills). These adaptable talents are viewed as a collection of non-specialized super-professional abilities that enable productive and harmonious contact with others. Flexible skills are described as qualities that enable the individual to develop and sustain interpersonal interactions in both professional and non-professional areas of life and activity, while taking into consideration personal potential. Soft skills may also be characterized as automated parts of conscious action that are generated in the process of implementation and constitute a coordinated capacity to accomplish a certain sort of motor, sensory, cognitive, or mental activity [11].

Potential prerequisites for a person's professional and personal self-actualization today are likely soft skills that ensure success regardless of the specifics of professional activity and the direction in which it is carried out. As a result, current academics frequently seek to view the idea of "soft skills" via the lenses of subjective perception, scientific interests, or even economic rewards. This is why there is no widely acknowledged and unambiguous substantive definition of soft skills [17]. The theoretical study of diverse research allows us to define the unifying psychological qualities of flexible skills and talents that are required for productive and harmonious contact with others, as well as professional and personal well-being.

Until our days, most people believed that success in professional activity was determined by a person's level of professionalism, which included self-awareness in the field, knowledge of official (position-based) tasks, perseverance, and so on. However, current trends imply that this is an obsolete misconception. Now, a competent expert is a "public specialist" who understands how to select, in a mobile and integrative manner, a productive mode of contact with the environment, which consists of many aspects, the dynamism of change and transformation of which is

determined by the situation of immersion. Sometimes, those who seek to realize themselves in society lack not just professionalism, but also the capacity to communicate effectively [3]. According to Budhai and Taddei [4], today's creative individuals must transcend the limitations of ordinary opportunities while being active and adventurous. According to Jeremy Lamri [17], success in modern culture is not something we are born with; rather, it is the result of ninety percent of our own effort and labor. Soft skills training market size is expected to grow by USD 119.22 billion till 2027 (see Figure 1):



Figure 1. Soft skills training market expected growth, 2023-2027 [29].

According to recent research, adaptable abilities are important for graduates of diverse specializations in any region throughout the world. Soft talents encompass social and professional communication, nonverbal communication, trust development, and leadership. According to research, flexible abilities are more important than hard skills in today's workplaces [24]. Since flexible abilities enable an individual to respond swiftly to professional and social upheavals, they are the most important in the university study process. The university's instructional environment fosters the development of these skills and attributes in students through academic and extracurricular activities. In this context, the study of possibilities and processes for the development of soft skills in higher education is particularly relevant today.

Moreover, digital technologies are a significant engine of growth, productivity, competitiveness, and innovation potential. In the labor market, they threaten current professions, particularly those involving the execution of boring activities, while also creating potential for the establishment of new ones, mostly connected to the digital economy. Jobs are developing as individuals engage more with digital technologies and artificial intelligence. While it is impossible to anticipate the rate of digital change and innovation in society, it is obvious that digital skills are becoming increasingly important for job possibilities and economic growth.

Keeping pace with the digital economy is not just about improving computer literacy, as the latest research on skills and occupations suggests. In particular, the surveys' results suggest that those working in fields that require at least moderate ICT skills, in addition to job-specific technical skills, also need a healthy mix of cognitive and socio-behavioral skills (Marr, 2022). Occupations with a high level of ICT skills rely heavily on people who can solve problems, learn, adapt, apply new methods and technologies, and have deep technical knowledge. Thus, the relationship between soft skills and digital skills is becoming ever closer, which makes it expedient and even necessary to consider them in a complex, inseparable from each other.

2 Literature Review

Today, some scholars think that there is a new shift in the educational paradigm as a result of the developments that occurred in affluent nations in the middle of the twentieth century and were related with civilization's slow transition to a

postindustrial society. These procedures established the definition of new skills of the twenty-first century, skills of a contemporary specialist, which must be developed beginning with preschool and primary education and ensuring the continuity of their creation across all levels of general and vocational education [37].

The transformation of the educational paradigm as a worldwide trend, caused by the world civilizational process, provided a response to our time's issues. The well-known scientist E. Toffler wrote about this in the twentieth century, describing it as a "wave of change". Toffler described the evolution of the education system as follows [23]: the first wave of change was the agrarian revolution; the second was the construction of an industrial civilization; and the third was modern realities, or the post-industrial wave.

Toffler observed that in most industrialized nations, schooling consisted of the acquisition of the following qualities: punctuality, obedience, and mechanical boring labor skills. All of these psychological qualities are in high demand in regular production in an industrial culture. Another characteristic of the second wave, directly connected to education, is the separation of society into producer and consumer: education is "produced" by the instructor and "consumed" by the student [23]. In general, the change in the educational paradigm is reflected in Table 1.

Table 1: Attitudes towards education in the new educational paradigm and paradigm of the 20th century, comparison

<i>Educational paradigm of the 21st century</i>	<i>Educational paradigm of the 20th century</i>
Learning system of nonlinear nature	The class-lesson training system of linear type
Teacher is a mentor, coordinator of students' actions; he organizes the information and educational environment	The teacher is a translator of information
Flexible class composition	The permanent composition of the class
Information resource is unlimited Expanded information and educational environment (designed by the teacher and students)	An information resource is limited Ready-made information and educational environment (prepared by the teacher)
Autonomous cognitive position of the student	The position of the student is the position of the consumer of ready-made information
The content of education is constantly supplemented, integrated from various sources of information, and transformed	The content of education is presented in textbooks and curricula, and if even it is added, it is to an insignificant extent
Education is the creation by a person of the image of the world in himself, aimed at the formation of subject, social, and spiritual culture	Education is the transfer of already-known samples of knowledge, skills, and abilities to students

Source: Compiled by the authors

Digital Competence, since 2006, has been considered one of the eight key competencies for lifelong learning for EU citizens. In January 2018, a set of recommendations for improving digital competence was published, which expanded its definition to include coding and cybersecurity [39]. These recommendations also introduce the concept of digital citizenship, draw attention to the vulnerability of personal data and threats to cybersecurity. They also cover media literacy and its associated risks of false news, cyberbullying and radicalization, which require awareness-raising and mitigation measures to counter.

The vision of the European Union on the use of digital technologies in education and training is expressed in the following communiqué of the European Commission:

- "Rethinking Education: investing in skills for better socio-economic outcomes" (2012). This document points to the link between the need for a "world-class professionally oriented training system" and the opportunities offered by the use of ICTs;
- "Opening up Education: innovative teaching and learning for all through new technologies and open educational resources" (2013). In this document, technology and open

educational resources are defined as opportunities for change in EU education. The importance of developing self-assessment tools for learners, educators, and educational institutions is emphasized, and the document calls for improving the capacity of educational systems in the EU and at the national level in the following aspects:

- Helping educators and students to master digital skills and teaching methods;
- Promoting the development and accessibility of open educational resources;
- Connecting classrooms to the Internet, equipping them with digital devices and materials.

Thus, digital skills have become a mandatory competence of a modern competitive specialist and can be included without exaggeration in soft skills. A widely used concept today is "digital skills". However, these skills include: technical skills in the use of digital technologies; the ability to meaningfully use digital technologies for work, study, and everyday life in general; the ability to critically evaluate digital technologies; motivation to participate in digital culture, while soft skills are much broader and successful application of digital skills is hardly possible without a good level of soft skills – this concerns, for example, working in distributed teams, leadership in a digital environment, the ability to recognize cyber threats (for example, related to phishing and online social engineering), etc. Scientists came to the conclusion that soft skills contribute to the effective interaction of a specialist with a digital society, high labor productivity [20]. Thus, the formation of effective soft skills occurs precisely under the condition of the widespread use of information technologies in education.

Today trend is characterized as "softer skills for a digital future" [21]. American specialists propose a pyramid of ten soft skills necessary to promote digital transformation (see Figure 2).

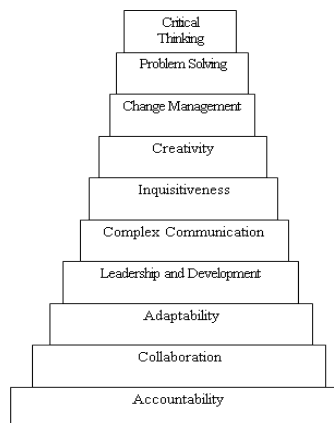


Figure 2. Ten soft skills needed to drive digital transformation [18]

Given the significant shifts in emphasis, as evidenced by the changing roles of student and teacher, curricula in the post-industrial era should focus on developing critical thinking, communication skills, creative ingenuity, and skills of interaction, as the ability to build interpersonal relationships is most in demand in this era.

Soft skills are required in every type of activity, thus it is critical to begin molding them from the early stages of education in a general education school and continue to actively develop them throughout university educational practice. In the process of professional training, the most effective development of soft skills may be done via the use of innovative technologies, interactive technologies that have shown themselves in the world educational practice [30; 38].

In order to retain social competitiveness, a modern human must constantly monitor trends and gain new knowledge and skills. Such an unstable scenario is referred to as the VUCA (volatility, uncertainty, complexity, ambiguity) world. The acronym VUCA

refers to the world's volatility and impermanence. It defines situations and factors in business and society that are beyond human control. In the modern world, graduates must gain new competences in order to successfully realize their professional potential. First and foremost, it is not about professional expertise, but rather about the ability to notice and adapt to changing environmental situations. According to experts, this is why we're hearing more about the need to improve soft skills [2; 13; 16; 15; 26; 27; 33; 34; 42].

Various writers mean by this idea different skills; yet, it is feasible to extend the classification in an expanded fashion. In particular, they define core communication skills (teamwork, negotiation, self-presentation, fundamental sales abilities, public speaking, outcome-oriented, business writing, client focus), self-management skills (emotional intelligence, excitement, initiative, perseverance, reflection, and feedback), skills of effective thinking (systemic, creative, structural, and logical thinking, discovering and evaluating data, generating and making decisions, design thinking, tactical and strategic thinking), leadership skills (performance management, planning, assigning tasks to staff, incentive, monitoring task completion, and mentoring) [25].

Scientists at Vienna University of Applied Sciences (H. Wahl, K. Kaufmann, F. Ekkammer, and others), whose opinions are cited in Dell'Aquila et al. [6], classified soft skills as follows: self-motivation and self-management; resistance to stress; readiness for further education or training; analytical skills, team integration and management; focus on goals and objectives; communication skills; skills of presentation.

Many scientists have addressed the issue of the development of soft skills at various eras, with each considering and defining the idea of soft skills in a unique way, which may be explained by the differences in perception and scope of scientific interests. It should be emphasized that all known definitions of the term are at least somewhat interlinked and interdependent, with some being inextricably linked. The practice of a holistic interpretation of the idea of soft skills and its content is successfully identified, in our opinion, through content analysis.

The traits listed above are exactly what will help to 'survive' in the VUCA environment. However, other experts believe that the period of VUCA has already passed. In 2016, a new concept called BANI was presented [43]. This notion works similarly: it defines the world around a human in four words (and offers suggestions on how to engage with it).

Ito 'deciphers' the paradigm as follows: B (Brittle) - the unwinding spiral of scientific and technological progress has formed a new construct of "disruptive innovations", which makes even the most stable systems fragile and incapable of self-preservation and control over the situation (examples are: the Internet, which is a decentralized system; the concept of M. Zuckerberg's metaverse, in which it is possible to establish other rules of civil behavior and regulation of relations between actors); A (Anxious) - the individual's loss of a sense of stability and control leads to permanent stress and depression, expressed in the reluctance to make decisions or express own position due to the inability to influence the events taking place in any way; N (Nonlinear) - as a new way of life takes shape - Industry 4.0 - events are increasingly becoming systemic in nature, affecting everything and everyone at once, which is a consequence of the increasing interdependence of actors at all micro-, meso- and macro levels; I (Incomprehensible) - information, which is the foundation of Industry 4.0, is generated in such large volumes that the individual ceases to be capable of high-quality processing and assimilation of it, which leads to a decrease in understanding of the processes taking place and a deterioration in business manageability and the impossibility of building a long-term development strategy [1].

It would be inaccurate to claim that the worlds of VUCA and BANI are diametrically opposed. BANI does not abandon the VUCA notion, but rather reformats it. This was necessary since many processes have gotten more sophisticated during the 1980s

and 1990s, and phenomena that did not exist previously (for example, widespread digitization). At the same time, the methods "built" in VUCA began to fall short; they remain crucial (as seen, for example, by the requisite flexibility and awareness outlined in BANI), but something else is also required.

It is frequently impossible to prosper without adequate soft skills. M. Rao (2012) says that a person's efficacy in professional activities is directly proportional to the amount of development of his soft skills, which separate successful experts from failed ones and effective organizations from inefficient ones. Scientists consider the critical nature of thinking and activity, openness to everything new and the ability to navigate it, communication skills, the ability to find and process information, the desire and aspiration for constant self-improvement, and so on to be among the leading qualities of the 21st century personality [10].

Several publications demonstrate the value of soft skills in numerous areas of the economy and business. For example, D. Pons (2016), based on a study of over 100 experienced engineers in various sectors, concluded that the two most desired soft skills in engineering are: 1) communication (both with management and within the team); and 2) planning (both of personal activities and projects) [28]. Furthermore, based on a study of more than 300 employers in 15 countries, scholars identified priority personality traits: 1) Communication and 2) Critical Thinking in Product Development. Other experts point to slightly different soft skills that university graduates need to develop for effective work in the sphere of design and engineering activities (building, architecture) [22].

A consulting company ThinkDigitalFirst proposes brief but essential description of vision of what does being in a BANI-world mean for digital leaders: "To be a digital superhero you'll need to embrace the idea that effective digital leadership is never about doing it once. It takes commitment to continuous effort, a never-ending push that involves challenging your team to upset the status quo in pursuit of better ways of working. Effective digital leaders are also good communicators, who value creativity and the willingness to stick your head above the parapet and challenge established processes. They are on a constant journey of exploration, searching for new ways to exploit technology and use analytics to understand how to provide better service to customers, support suppliers and partners and build a more sustainable organization. In a BANI world, following 5-steps will ensure your effectiveness as a digital leader: 1) Always keep your finger on the pulse of industry trends; 2) Ensure you define and communicate a clear vision across the organization; 3) Make sure that you are a digital agent of change at the helm; 4) Develop a customer-based strategy; 5) Use data-driven analysis" [7]. Thus, as one can clearly see, purely digital skills represent an integral part of soft skills within the landscape of information technologies, and, in turn, information technologies is a crucial tool for training specialists who would be able to enter labor market of the BANI-world successfully.

Under such circumstances, there is an obvious need for detailed research that correlates the realities of the BANI-world with the possibilities of transforming university educational paradigms in order to ensure high-quality training of graduates with the full range of necessary soft skills and motivation for life-long learning. Meanwhile, a higher assessment of soft skills' role in comparison to professional competencies for the successful start of a professional career of young specialists does not imply great extent of change in the content of educational programs in a particular specialty, but rather the need to revise attitudes, approaches to the formation of soft skills, and the use of appropriate teaching technologies, as well as interactive models of teacher behavior, including soft skills as the core means of interaction with students.

3 Method

The methodological basis of the study is represented by general scientific principles, which include the following: the principle

of development, according to which a person is defined as a developing system under the influence of socially determined components; the principle of cause-and-effect relationships; systematic approach, according to which a complex of soft skills can be considered as a multidimensional structure in the interaction with the surrounding reality

During the research, the methods of content analysis, classification elements within grounded theory approach, and structural-logical analysis were employed.

4 Results and Discussion

The requirement to build soft skills necessitates a rethinking of learning processes, as the traditional method entails the transmission of professional abilities (“hard skills”) from instructor to student. In most situations, mastering soft skills does not need the introduction of new disciplines since abilities are learned via ways, through a process, rather than through material (content). Soft skills may be developed in parallel with information transmission utilizing sophisticated pedagogy techniques, as well as through supplemental education programs, but it is achievable within practically any subject using familiar approaches [19]. Meanwhile, the whole array of methods used are consistent with the learning pyramid, which states that with the “lecture” learning format, only 5% of the material is learned (which has been repeatedly confirmed empirically: when asked “What have you learned at the last lecture?” students, at best, start flipping through the notes), but often even in practical (seminar) classes, the teacher rather shares information than attracts students to problem solving and discussion [22]. In the learning pyramid, over 50% of the material is assimilated, if there is a group discussion, practical tasks are performed (in our opinion, each student should try to complete the task, and not just the most active or who came to the board), and even mutual teaching takes place.

Analyzing the potential of diverse fields for the creation of soft skills, researchers frequently identify the same talents that need to be developed: critical thinking, communication, and teamwork [35]. L. Fernandez-Sanz et al. [9] present an overview of research conducted in 45 countries to establish essential soft skills. Scientists conclude that humans often employ the same talents.

Although soft skills have firmly established themselves among purely professional talents, their level of development is rarely examined during training sessions. The topic of objectively measuring the quality of this category of talents remains unresolved. Many procedures have yet to become classic, as scientists are always developing them in order to make them more precise and easy. Among the various methodological techniques, the mutual evaluation of students should be stressed [6].

Studies in the area of soft skills are continuous. The core subjects of study cover the following:

- Soft skills diagnostics and assessment (which is especially considered crucial in STEM education) [32];
- Using of diverse approaches, methods, and tactics to build these talents, such as multidisciplinary project work and group work formats [10];
- Comparison of the efficacy of the methods and tactics utilized, such as collaboration and project activities, debates and role-playing, in the development of critical thinking and communication skills [30];
- Identification of individual skill development characteristics – in particular, teamwork, critical thinking, and so on [17];
- Using of linguistic disciplines to enhance soft skills [24].

Meanwhile, in overall, the emergence of a skill system, as described in Figure 3, is predicted, which includes creativity, collaboration, communication, and critical thinking:

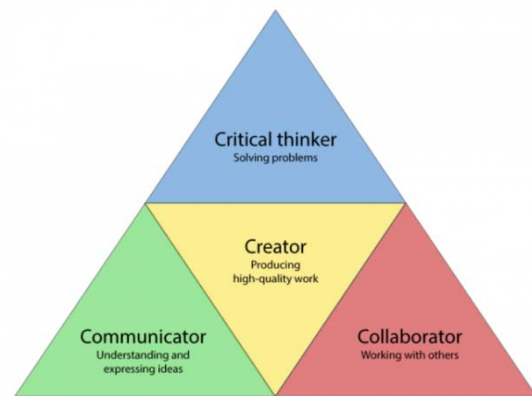


Figure 3. Skills of the 21st century [3].

However, in the BANI world, it is vital to grasp the current “pitfalls” of the so-called “hidden dimensions of BANI” (see Figure 4), and the higher education system must undergo suitable revisions.

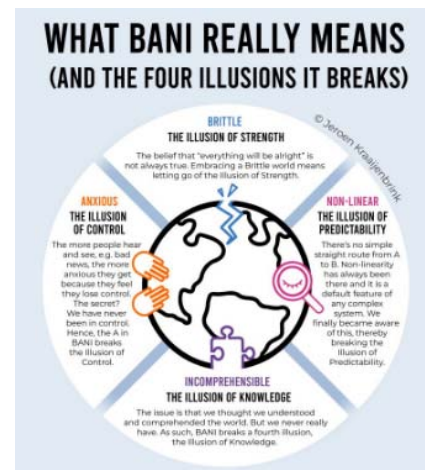


Figure 4. Hidden (latent) manifestations of BANI world [36]

Today university graduate should be able to detect and resolve these illusions in himself, his team, and the company. In turn, this is achievable on the basis of the development and execution of training courses and programs targeted at the construction of skills specialized for the BANI-world, which is yet unknown to the sight of VUCA-world ‘natives’ (see Figure 5):

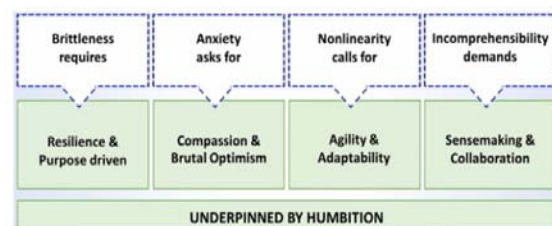


Figure 5. Traits of competitive university graduate in BANI-world [15].

Soft skills are classified as transversal skills (competencies), which are described in European research as critical to sustainable development. Transversal skills are defined as a set of closely related specific competencies that combine: the use of interactive tools (language, symbols and texts, knowledge and information, technology); interaction in heterogeneous groups (building relationships with others, cooperation, teamwork, conflict management and resolution); independent activity (actions for the future, the formation and implementation of life plans and personal needs) [35]. Soft skills that serve as the

foundation for transversal ones include the capacity to deal with information, as well as the universal traits of thinking flexibility, criticality, and creativity, as well as a broad interdisciplinary spectrum of adaptable abilities.

Experiential learning, as used by corporate colleges, prominent business schools, and some Ivy League institutions, is one of the most successful techniques for gaining such abilities. It is a method of informal learning that relies on "trial and error" [5]. The Experiential Learning Cycle is a four-stage learning process that is repeated in every contact and experience: Experience, Consideration, Thinking, and Acting.

Kolb's learning cycle integrates information, activity, and reflection into the experimental learning process. The Association for Experiential Education recommends categorizing learning as experiential if it delivers the following [41]:

- Reflection, critical analysis, and synthesis;
- The chance for students to take the initiative, make decisions, and be accountable for the outcomes;
- Students engagement in learning intellectually, creatively, emotionally, socially or physically;
- Curriculum design facilitates learning from natural consequences, failures, and accomplishments.

The use of the provided criteria indicates a wide range of alternative configurations and variations of educational activities, measures, or events.

Eli Noam, a Columbia University professor, did an empirical study on the efficiency of experiential learning in financial management and management accounting students using the methodology of the same university's MBA courses [8]. The course "IT Investment Management" was chosen for experimental training since it was the second year of study and the third in the program's cycle of financial disciplines (after "Financial Management" and "Corporate Finance and Business Value Management"). The reasoning behind developing the complete cycle of financial disciplines entails a gradual transition from simple to sophisticated. According to Noam, the most important aspect of experiential self-learning is the actual problem or topic on which the trainees would be working. The task's reality-based character results in a fundamentally different degree of awareness and appraisal of uncertainty as compared to other active learning approaches (such as the traditional usage of case studies) [8]. At the same time, the instructor must balance authoritarianism and democracy when working with the group. This will establish a clear course of action and boost the confidence of skeptical participants, while also allowing participants to choose specific approaches, actions, and creative solutions to experimental problems, as well as teach students to adapt their behavior strategies when working in environments with various types of leadership. He also points out that the participants' social experience and maturity contribute to productive work, profound conscious learning, and reflection. Students who have strong social and communication skills are more likely to participate and encourage their teammates. This is especially crucial when the assignment involves a high level of ambiguity [8].

The degree of trust between the teacher and the program participants is an important condition for success. It contributes to effective communication and, at first, provides a time advantage: participants can work actively even if they do not fully understand the goal and direction, but according to the training event's plan, this understanding should come as a "moment of insight". Such a soft skill is very important, because its use in the BANI-environment is frequently required. Otherwise, such an approach is quite harmful for the instructor, as it might produce irritation and contribute to catastrophic disagreements [8]. With the correct dynamics of the course and a well created and 'orchestrated' climax (for example, presentation of the work's findings), participants' self-reflection (beyond the limitations of group reflection) can be removed from the course itself. This will save time, letting digging deeper into personal experiences "alone with self" [8].

As previously stated, there is currently no single classification for soft skills, and the exact number of attributes and talents that meet the description of such skills has yet to be identified. However, all of the talents described above are enhanced by thinking characteristics (speed, inventiveness, adaptability, and consistency (systemic nature)). Flexibility of thought refers to a person's capacity to swiftly and readily look for different solution options. thought flexibility is the capacity to flexibly dispose of source data, build associative associations, and shift in behavior and thought from one class of occurrences to another, frequently widely apart in essence. Many experts believe that thinking is one of the most significant human qualities. Thinking enables a person to tackle critical life problems, identify solutions, and be innovative in problem solving. Thinking may differ. It might be analytical, critical, creative, or abstract. However, it is critical that it be adaptable, as this is the foundation of future abilities as a specialist in the BANI sector.

5 Conclusion

The article defines soft skills as a collection of non-specialized, career-important cross-professional talents that are responsible for effective involvement in the work process, high productivity, and cross-cutting, meaning they are not tied to a single subject area. However, conceptually, they suggest the ability to think about ideas from different perspectives or solve multiple problems at once, to use a creative approach in the implementation of specific tasks, and to change the algorithm to a fundamentally different one, a template for analysis and synthesis. The demand for such skills in the modern labor market necessitates a shift in the paradigm of designing and implementing training courses and programs in higher education toward a greater use of experiential learning methods, with a focus on the development of emotional intelligence.

It may be important to build supplementary training programs for the development of personal traits in all aspects of soft skills. To plan activities for the development of soft skills, it is best to include not only instructors and educators, but also students themselves.

Literature:

1. Abeysekera, N. (2023). Institutional and action research for VUCA and BANI world. 5th Asian Virtual Conference on Institutional and Action Research. <http://dx.doi.org/10.13140/RG.2.2.34878.66888>
2. Avramenko, E.V., Opanasenko, V.P., & Samus, T.V. (2023). Formation of professional competence of future agricultural engineers regarding the use of AgTech innovations in agriculture. *Science and Technology Today*, 10(24), 188-197.
3. Banga, K., & te Velde, D. (2019). Preparing developing countries for the future of work: Understanding skills ecosystem in a digital era. Overseas Development Institute, Background Paper 29.
4. Budhai, S., & Taddei, L. (2015). *Teaching the 4Cs with technology: How do I use 21st century tools to teach 21st century skills?* ASCD.
5. Buzzelli, M., & Asafo-Adjei, E. (2023). Experiential learning and the university's host community: Rapid growth, contested mission and policy challenge. *Higher Education*, 85, 521-538. <https://doi.org/10.1007/s10734-022-00849-1>
6. Dell'Aquila, E., Marocco, D., Pontocorvo, M., Di Ferdinando, A., Schembri, M., Miglino, O. (2017). *Educational games for soft-skills training in digital environments: New perspectives*. Springer.
7. *Digital Leader Scenario Planning* (2023). ThinkDigitalFirst. <https://thinkdigitalfirst.com/2023/01/11/digital-leader-scenario-planning-vuca-vs-bani/>
8. Facemire, B. (2022). *Experiential learning: A treatise on education*. Koehler Books.
9. Fernández-Sanz L., Villalba M. T., Medina J. A., Misra S. (2017). A study on the key soft skills for successful participation of students in multinational engineering education. *International Journal of Engineering Education*, 33(6), 2061-2070.

10. Garcia, I., Pacheco, C., Méndez, F., & Calvo-Manzano, J. A. (2020). The effects of game-based learning in the acquisition of "soft skills" on undergraduate software engineering courses: A systematic literature review. *Computer Applications in Engineering Education*, 28(5), 1327-1354.
11. Grand-Clement, S. (2017). *Digital learning: education and skills in the digital age*. RAND Europe.
12. Gulati, R., & Reaiche, C. (2020). Soft Skills: A Key Driver for Digital Transformation. ICDS 2020: The Fourteenth International Conference on Digital Society, pp. 40-43.
13. Ihnatenko, H., Samus, T., Ihnatenko, O., Opanasenko, V., Vovk, B. (2022). Forming intending teachers' health preserving competence in the educational environment of higher educational institution. *ScienceRise: Pedagogical Education*, 2(47), 27-34.
14. Ismail, I. (2019). Utilizing technologies in teaching soft skills: Issues and challenges. *Global Conferences Series: Social Sciences, Education and Humanities (GCSSEH)*, 2, 1-6.
15. Kok, J. (2019). *Leading in a VUCA world*. Springer.
16. Kovalchuk, V., Marynchenko, I., Sherudylo, A., Vovk, B., Samus, T., Soroka, V. (2021). Implementation of the learning model based on the results of future vocational teachers' professional training. *AD ALTA-Journal of Interdisciplinary Research*, 11(2), Special Issue XXI, 214-219.
17. Lamri, J. (2019). *The 21st century skills: How soft skills can make the difference in the digital era*. GRIN Verlag.
18. Marr, B. (2022). *Future skills: The 20 skills and competencies everyone needs to succeed in a digital world*. Wiley.
19. Melsner, N. (2018). *Teaching soft skills in a hard world: Skills for beginning teachers*. Rowman & Littlefield Publishers.
20. Mohammed, Z., Alsadaji, A., Al-Saadi, S., Al-Fayyadh (2023). Components of soft skills for University students in the 21st century: An overview of literature review. *Medical Education Bulletin*, 4(1), 601-60.
21. Mukminin, A., Arif, N., Fajarayani, N., Habibi, A. (2017). In search of quality student teachers in a digital era: Reframing the practices of soft skills in teacher education. *The Turkish Online Journal of Educational Technology*, 16(3), 71-78.
22. Mwita, K., Kinunda, S., Obwolo, S., & Mwilongo, N. (2023). Soft skills development in higher education institutions: Students' perceived role of universities and students' self-initiatives in bridging the soft skills gap. *International Journal of Research in Business and Social Science*, 12(3), 505-513. <https://doi.org/10.20525/ijrbs.v12i3.2435>
23. Nagarajan, S., & Mohanasundaram, R. (2020). *Innovations and technologies for soft skill development and learning*. Information Science Reference.
24. Nghia, T. (2021). *Building soft skills for employability*. Routledge.
25. Obermayer, N., Cszimadia, T., Banasz, Z., Purnhauser, P. (2023). The importance of digital and soft skills in the digital age. *European Conference on Knowledge Management*, 24(2), 978-987.
26. Opanasenko, V.P., & Samus, T.V. (2022). Implementation of project technology during the study by teachers of vocational training of technical disciplines of the professional training cycle. *Scientific Innovations and Advanced Technologies (Public Administration Series, Law Series, Economics Series, Psychology Series, Pedagogy Series)*, 9(11), 167-178.
27. Opanasenko, V., & Samus, T. (2021). Model of formation of research competence of teachers of professional education in the process of their professional training. Innovative approaches to ensuring the quality of education, scientific research and technological processes: Series of monographs. Faculty of Architecture, Civil Engineering and Applied Arts Katowice School of Technology. Monograph 43. Katowice: Wydawnictwo Wyższej Szkoły Technicznej w Katowicach, pp. 779-786.
28. Pons, D. (2016). Relative importance of professional practice and engineering management competencies. *European Journal of Engineering Education*. 41(5), 530-547.
29. PR Newswire (2023, February 27). Soft skills training market size to grow by USD 119.22 billion between 2022 and 2027; Growth opportunities led by Articulate Global Inc., Computer Generated Solutions Inc. among others – Technavio, *Yahoo Finance*. <https://finance.yahoo.com/news/soft-skills-training-market-size>
30. Qizi, K. (2020). Soft skills development in higher education. *Universal Journal of Educational Research*, 8(5), 1916-1925.
31. Rao, M. (2012). *Soft skills for students: Classroom to corporate*. Aadi Publications.
32. Rovida, E., & Zafferi, G. (2022). *The importance of soft skills in engineering and engineering education*. Springer.
33. Samus, T. V. (2023). Formation of the ecological worldview of future agricultural engineers in the process of professional training based on the principles of an integrated approach. *Bulletin of Science and Education, Philology Series, Pedagogy Series, Sociology Series, Culture and Art Series, History and Archeology Series*, 10(16), 794-806.
34. Samus, T. V. (2018). Theoretical and methodological principles of the formation of health-preserving competence of future teachers of professional education in the process of professional training. In: Yu. D. Boychuk, ed. *Modern health-saving technologies* (pp. 383-288). Kharkiv: Original.
35. Scheerens, J., van der Werf, G., & de Boer, H. (2020). *Soft skills in education: Putting the evidence in perspective*. Springer.
36. Sidor-Rzadzowska, M. (2022). VUCA or BANI? – The challenges of human capital management in post-pandemic times. *Scientific Papers of Silesian University of Technology*, 159, 393-402.
37. Sutin, S. E., & Jacob, W. J. (2016). *Strategic transformation of higher education: Challenges and solutions in a global economy*. Boston, MA: Rowman & Littlefield.
38. Taguma, M., & Gabriel, F. (2018). *Future of education and skills 2030: Curriculum analysis*. OECD.
39. Transparency Market Research (2023). *Soft skills training market*. <https://www.transparencymarketresearch.com/soft-skills-training-market.html>
40. Tuckman, B.W. (1965). Developmental sequence in small groups. *Psychological Bulletin*, 63(6), 384.
41. Villarroel, V., Benavente, M., Chuecas, M.J., Bruna, D. (2020). Experiential learning in higher education. A student-centered teaching method that improves perceived learning. *Journal of University Teaching & Learning Practice*, 17(5), 1-17.
42. Waller, R., Lemoine, P., Mense, E., Garretson, C., Richardson, M. (2019). Global higher education in a VUCA world: Concerns and projections. *Journal of Education and Development*, 3(2), 73-83.
43. Zakhao, Y. (2022). Comparable analysis of approaches to world concepts: SPOD society, VUCA society and BANI society. *Social Economics*, 64, 149-158.

Primary Paper Section: A

Secondary Paper Section: AM