

2. Олендр Т. М. Робоча програма навчальної дисципліни «Підготовка вчителів природничих наук в університетах США» для здобувачів другого (магістерського) рівня вищої освіти, які навчаються за освітньо-професійною програмою «Середня освіта (Природничі науки)» за спеціальністю 014.15 Середня освіта (Природничі науки). 17 с. URL.: <https://elr.tnpu.edu.ua/login/index.php>
3. Олендр Т. М., Степанюк А. В. Моніторинг якості природничої освіти в університетах США : монографія. Тернопіль : ТНПУ ім. В. Гнатюка, 2018. 260 с.
4. Щур Н., Олендр Т., Степанюк А. Підготовка вчителя природничих наук в умовах неперервної педагогічної освіти в США : монографія. Тернопіль : ТНПУ ім. В. Гнатюка, 2020. 266 с.

## **SOFT SKILLS DEVELOPMENT STRATEGIES FOR FUTURE TEACHERS OF MATHS AND NATURAL SCIENCES IN THE PROCESS OF LEARNING ENGLISH FOR SPECIFIC PURPOSES**

**Malykhin Oleksandr Volodymyrovych**

Doctor of Pedagogical Sciences, Head of the Didactics Department, Professor,  
Institute of Pedagogy of the National Academy of Educational Sciences of Ukraine  
[malykhinalex1972@gmail.com](mailto:malykhinalex1972@gmail.com)

**Aristova Nataliia Oleksandrivna**

Doctor of Pedagogical Sciences, Head of the International Relations  
and Research Cooperation Department, Professor,  
Institute of Pedagogy of the National Academy of Educational Sciences of Ukraine  
[n.aristova.na@gmail.com](mailto:n.aristova.na@gmail.com)

More and more scholars and practitioners are increasingly realizing that while studying at university future entrants to the labour market should acquire a broad range of skills and competences that could increase their competitiveness and rise potential earnings. In that regard, a special emphasis should be given to the problem of improving soft skills among future teachers of Maths and Natural Sciences. It is precisely these skills that enable students to achieve their full potential.

Studies published in the peer-review literature show that there is no consensus neither on the understanding of the concept of “soft skills” nor on the number of soft skills students should gain while studying. Thus, for instance, P. Kaushik and A. K. Kumar Bansal define soft skills as “essentially non-technical or non domain skills which are intangible but reflect in the effectiveness of a person at the workplace” [4, p. 150]. According to P. Klaus, J. M. Rohman, and M. Hamaker, soft skills are “the nontechnical traits and behaviors needed for successful career navigation” [5, p. 1]. M. Arat describes soft skills as “the skills that can be learned through training and make a better employee and person in terms of communication, adaptability and problem solving” [1, p. 47]. We regard soft skills as personal and interpersonal meta-abilities that enable employees to make positive contributions to their professional development, to be competitive, successful and more efficient in the workplace, to work well under pressure and to make sound decisions etc. P. Kaushik and

A. K. Kumar Bansal list the following among the right mix of soft skills: personality specific traits and attitudes, social grace and interpersonal behavior, communication skills and emotional maturity etc [4, p. 150]. The list of soft skills compiled by P. Klaus, J. M. Rohman, and M. Hamaker include “being self-aware, trustworthiness, conscientiousness, adaptability, critical thinking, attitude, initiative, empathy, confidence, integrity, self-control, organizational awareness, likability, influence, risk taking, problem solving, leadership, time management” [5, p. 2]. We can conclude that a unified classification of soft skills recognized and acknowledged by all concerned does not exist and in most cases different qualities and abilities are regarded as soft skills.

According to “Council Recommendation of 22 May 2018 on key competences for lifelong learning (Text with EEA relevance) (2018/C 189/01)” [3], a set of soft skills essential for personal fulfillment of potential employees include problem solving skills, critical thinking, team work skills, creativity, computational thinking, self-regulation, analytical thinking, resilience, intercultural skills and communication skills including negotiation skills.

Considering English for Specific Purposes as an efficient medium of instruction we may assume that its educational content can provide numerous opportunities for improving soft skills among future humanities and social sciences teachers as well as future Maths and Natural Sciences teachers. We strongly believe that the following development strategies can be applied in the process of learning English: 1) the strategy of constant and systemic combining fundamental principles of competence-based, action-oriented and blended-learning approaches; 2) the strategy of integrating formal learning with elements of non-formal and informal learning; 3) the strategy of involving students into specially focused network professional communities; 4) the strategy of using didactic potential of open educational resources; 5) the strategy of obtaining up-to-date knowledge and skills in the field of Maths and Natural Sciences from the leading English-language sources; 6) the strategy of mastering innovative approaches, technologies, methods and techniques of teaching and learning Maths and Natural Sciences; 7) the strategy of providing learning-style based activities for boosting students’ soft skills.

*The strategy of constant and systemic combining fundamental principles of competence-based, action-oriented and blended-learning approaches.* A review of the literature shows in order to improve students’ soft skills the core principles of several methodological approaches should be applied. Moreover, each individual case of choosing methodological approaches is determined by outcomes to be achieved upon completion of training programs. Regarding future Maths and Natural Sciences teachers, the consideration of the fundamental principles of the competence-based, action-oriented and blended-learning approaches enables to improve their soft skills effectively. Taking into account the fact that “language learning should be directed towards enabling learners to act in real-life situations, expressing themselves and accomplishing tasks of different natures” [2, p. 29], the application of the action-

oriented approach in the educational process makes it possible to develop future Maths and Natural Sciences teachers' soft skills by means of a variety of problem solving, team building, creative thinking and communicative activities. Teaching English for Specific Purposes at universities is focused on providing students with foreign language knowledge and communicative skills and it proves the rightness of combining competence-based and action-oriented approaches. Current transformations taking place amid Covid-19 pandemic tend to combine best practices of distance learning and in-person instruction which explains the necessity to combine main ideas of the competence-based, action-oriented and blended-learning approaches while improving future Maths and Natural Sciences teachers' soft skills.

*The strategy of integrating formal learning with elements of non-formal and informal learning.* Integration of formal, non-formal and informal learning can have a profound impact on the development of future Maths and Natural Sciences teachers' soft skills. A literature analysis indicates that in most cases formal learning is aimed at equipping students with so-called hard skills. It means that in order to maximize the impact of formal learning on enhancing students' soft skills universities have to provide non-formal and informal learning as well.

*The strategy of involving students into specially focused network professional communities.* The main reason for devising the following strategy is that while learning English for Specific Purposes at university future Maths and Natural Sciences teachers use the English language as a means for obtaining information concerning up-to-date knowledge and skills in the field of Maths and Natural Sciences from the leading English-language sources, on the one hand, and the ideas that are closely connected with the problems of mastering innovative approaches, technologies, methods and techniques of teaching and learning Maths and Natural Sciences, on the other hand. We strongly believe that in this way future Maths and Natural Sciences teachers are able to gain practical and emotional support, to reveal their potential and share their unique experience with other network members and, what is more, to improve their soft skills.

*The strategy of using didactic potential of open educational resources.* Taking into account the fact that the use of open educational resources while learning English for Specific Purposes significantly intensifies students' cognitive activity and the development of their soft skills, we devised the fourth soft skills development strategy – the use of didactic potential of open educational resources.

*The strategy of obtaining up-to-date knowledge and skills in the field of Maths and Natural Sciences from the leading English-language sources.* The realization of this strategy implies that the higher level of language proficiency students demonstrate the more opportunities they have for updating their knowledge and skills in the field of Maths and Natural Sciences from the leading English-language sources provided by top world universities.

*The strategy of mastering innovative approaches, technologies, methods and techniques of teaching and learning Maths and Natural Sciences.* The idea underlying

the development of this strategy is connected with the previous strategy concerning the level of students' language proficiency. The higher level of language proficiency students demonstrate the more opportunities they have for mastering innovative approaches, technologies, methods and techniques of teaching and learning Maths and Natural Sciences.

*The strategy of providing learning-style based activities for boosting students' soft skills.* The seventh strategy was devised as being targeted at introducing learning-style based activities in the process of learning English for Specific Purposes for enhancing future Maths and Natural Sciences teachers' soft skills. The implementation of this strategy involves identifying students' learning styles, on the one hand, and, on the other hand, applying various learning-style based activities considering identified learning styles aimed at equipping students with foreign language knowledge and soft skills.

### References

1. Arat, M. (2014). Acquiring Soft Skills at University. *Journal of Educational and Industrial Studies in the World*, 4(3), 46–51.
2. Common European Framework of Reference for Languages: Learning, Teaching, Assessment, 2001. [Online]. Available: <https://rm.coe.int/common-european-framework-of-reference-for-languages-learning-teaching/16809ea0d4> [Accessed Dec. 17, 2020].
3. Council Recommendation of 22 May 2018 on key competences for lifelong learning (Text with EEA relevance) (2018/C 189/01), 2018. [Online]. Available: [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604\(01\)&from=LT](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604(01)&from=LT) [Accessed 25 Nov., 2020].
4. Kaushik, P., & Kumar Bansal, A. K. (2015). Enhancement In Soft Skills Through Students Training Intervention. *International Journal of Advanced Information Science and Technology*, 4(6), 150–157. Doi: 10.15693/ijaist/2015.v4i6.150-157.
5. Klaus, P., Rohman, J. M. & Hamaker, M. (2007). The hard truth about soft skills: workplace lessons smart people wish they'd learned sooner. HarperCollins e-books.

## ОСОБЛИВОСТІ МЕТОДИЧНОЇ ПІДГОТОВКИ МАЙБУТНІХ УЧИТЕЛІВ ПРИРОДНИЧИХ НАУК У ЗАКЛАДАХ ВИЩОЇ ОСВІТИ

Грицай Наталія Богданівна

доктор педагогічних наук, професор, завідувачка кафедри природничих наук з методиками навчання Рівненського державного гуманітарного університету

[grynat1104@ukr.net](mailto:grynat1104@ukr.net)

Реалії сьогодення вносять свої корективи в процес підготовки майбутніх учителів біології та інших природничих предметів. З огляду на те, що Типовою освітньою програмою для 5–9 класів закладів загальної середньої освіти, затвердженою наказом Міністерства освіти України від 19 лютого 2021 року № 235, передбачено вивчення нових інтегрованих курсів з природничих наук у