

ТРАНСФОРМАЦІЯ ПЕДАГОГІЧНИХ СТРАТЕГІЙ МОВНОЇ ПІДГОТОВКИ В НАЦІОНАЛЬНІЙ ОСВІТІ

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ENHANCING CRITICAL THINKING AND PROBLEM-SOLVING SKILLS IN THE PROCESS OF MASTERING ENGLISH

Анотація. На основі аналізу іноземних джерел автори статті аналізують та узагальнюють зміст понять «критичне мислення», «вміння вирішувати проблеми» та «творчість». В статті обґрунтовується доцільність та важливість застосування інтерактивних технік взаємодії викладача та студентів в процесі удосконалення вивчення іноземної мови (англійської) з метою розвитку навичок критичного мислення та творчого підходу до вирішення проблемних питань. Автори також звертають увагу на певні складнощі оцінки вмінь студентів вирішувати проблемні питання.

Ключові слова: критичне мислення, творчість, вивчення іноземних мов, вміння вирішувати проблеми, навчальні техніки.

Summary. Having analyzed the existing foreign academic publications covering the issues of developing and enhancing creativity and critical thinking in education and science, the authors of the article have looked into and summarized the meaning of the concepts of «critical thinking», «problem solving skills» and «creativity». The article justifies the feasibility and importance of implementing interactive techniques of communication between the facilitator of the learning journey and students in the process of mastering a foreign language (English) in order to develop critical thinking skills and a creative approach to solving problematic issues. The authors also draw attention to certain difficulties and challenges in assessing students' skills in solving problematic issues.

Key words: critical thinking, creativity, learning a foreign language, problem-solving skills, teaching techniques.

Introduction. It is no longer a surprise that nowadays the business world is undergoing unprecedented changes and drastic challenges owing to which business men and women are dealing with unique work contexts that a few decades ago were not prevalent. With advanced communication and transportation technologies facilitating global interconnectedness, globalization is altering today's working world.

In the wake of AI's gathering pace in all spheres of our life organizations today are increasingly reliant upon technology to bring together diverse teams of individuals from around the globe who can solve the challenges that are beyond the capabilities of a single

person. However, while such collaborations may bring together the expertise needed to solve problems, this does not mean that the team members are also experts in teamwork. Failures in communication, coordination, performance monitoring, and other teamwork processes due to issues of working across cultural, temporal, and digital boundaries have plagued teams for years, often with disastrous results. Science and academic approaches have widely been credited as a major source of discovery and economic development. In view of all above mentioned for Ukraine it is undeniably important to take into account the fact that in order to maintain our country's competitiveness in the twenty-first century, we (educators, scholars, academics) must cultivate the skilled scientists, economists and engineers needed to create tomorrow's innovations. We do believe that the vitality of the nation is notably derived in large part from the productivity of well-trained people and the steady stream of scientific and technical innovations they produce and design.

The purpose of the article lies in justifying the means and methods to promote creative thinking in business and economy problem solving.

Literature and recent publication review. For many decades, higher education reformers have promoted the idea that learners should be engaged in the excitement of science; they should be helped to discover the value of evidence-based reasoning and higher-order cognitive skills, and be taught to become innovative problem solvers [7]. The issue of cultivating and profoundly boosting creative thinking and critical thinking skills has always been in the scope of academic research.

Among scholars dedicating their academic research to analyzing the essence and significance of developing students' problem-solving skills (creative thinking) we can point out works of Kaufman J.C. and Beghetto R.A. The authors often view inventiveness or creativity in scientific fields as the kind of big-C creativity, borrowing the term that earlier workers applied to the talents of experts in various fields who were identified as particularly creative by their expert colleagues [8]. In this sense, creativity is seen as the ability of individuals to generate new ideas that contribute substantially to an intellectual domain. Howard Gardner defined such a creative person as one who «regularly solves problems, fashions products, or defines new questions in a domain in a way that is initially considered novel but that ultimately comes to be accepted in a particular cultural setting» [3].

Teresa M. Amabile, the Edsel Bryant Ford Professor, Emerita, at Harvard Business School, is deeply convinced that the exact definition of creativity would be consistent with the workplace, namely «coming up with fresh ideas for changing products, services and processes so as to better achieve the organization's goals» [2, p. 372]. Some educators also identify so called «Mini-c creativity» which is notably based on «possibility thinking» as experienced when a worker suddenly has the insight to visualize a new, improved way to accomplish a task [5, pp. 3–4]. In this writing we share the idea of Robert L. De Haan, the American scholar and educator, that creative thinking is a multicomponent process, mediated through social interactions, that can be explained by reference to increasingly well-understood mental abilities such as cognitive flexibility and cognitive control that are widely distributed in the population [7]. Many authors since then have extended the argument that a creative act is not a singular event but a process, an interplay among several interactive cognitive and affective elements.

Educators and scholar (U. Neisser, R. Burton) are convinced that there are two stages to the creative process that is consistent with results from cognition research indicating that there are two distinct modes of thought, associative and analytical [7].

In the associative mode, thinking is defocused, suggestive, and intuitive, revealing remote or subtle connections between items that may be correlated, or may not, and are usually not causally related [4]. Whereas in the analytical mode, thought is focused and evaluative, more conducive to analyzing relationships of cause and effect [4]. Science educators associate the analytical mode with the upper levels (analysis, synthesis, and evaluation) of Bloom's taxonomy, or with «critical thinking», the process that underlies the «purposeful, self-regulatory judgment that drives problem-solving and decision-making» [7].

Robert L. De Haan thinks that these modes of thinking are under cognitive control through the executive functions of the brain. The core executive functions, which are thought to underlie all planning, problem solving, and reasoning, are defined) as working memory control (mentally holding and retrieving information), cognitive flexibility (considering multiple ideas and seeing different perspectives), and inhibitory control (resisting several thoughts or actions to focus on one) [7].

Discussion. Many scholars acknowledge that creative discoveries in the real world such as solving the problems of cutting-edge science – which are usually complex and multipart – are influenced or even stimulated by social interaction among experts. We also hold the opinion that a sudden insight as an integral component of problem-solving skills and creativity will probably have included at least three diverse, but testable elements: 1) divergent thinking, including ideational fluency or cognitive flexibility, which is the cognitive executive function that underlies the ability to visualize and accept many ideas related to a problem; 2) convergent thinking or the application of inhibitory control to focus and mentally evaluate ideas; and 3) analogical thinking, the ability to understand a novel idea in terms of one that is already familiar [7].

In our university course of learning a foreign language (English mainly) we as instructors and facilitators of the learning process educate our students primarily through practical communication and interaction-based seminars and textbooks that are dominated by concepts, principles, and evidence-based ways of thinking. This is despite ample evidence that many students gain little new knowledge from traditional lectures. Moreover, it is well documented that these methods engender namely active engagement, intellectual excitement, and cognitive flexibility [5]. We share the idea that cognitive flexibility, as noted, is one of the three core mental executive functions involved in creative problem solving. The capacity to apply ideas creatively in new contexts, referred to as the ability to «transfer» knowledge, requires that learners have opportunities to actively develop their own representations of information to convert it to a usable form [3, p. 208].

In our interactive practices we can apply the following techniques:

- Model creativity – students develop creativity when instructors model creative thinking and inventiveness.
- Repeatedly encourage idea generation – students need to be reminded to generate their own ideas and solutions in an environment free of criticism.
- Cross-fertilize ideas – where possible, avoid teaching in subject-area boxes: a math box, a social studies box, etc.; students' creative ideas and insights often result from learning to integrate material across subject areas.

- Build self-efficacy – all students have the capacity to create and to experience the joy of having new ideas, but they must be helped to believe in their own capacity to be creative.

- Constantly question assumptions – make questioning a part of the daily classroom exchange; it is more important for students to learn what questions to ask and how to ask them than to learn the answers.

- Imagine other viewpoints – students broaden their perspectives by learning to reflect upon ideas and concepts from different points of view [7; 3].

We are convinced that these strategies are all consistent with the knowledge about creativity reviewed above, but there is also evidence from well-designed investigations to warrant the claim that they can enhance measurable indicators of creativity in university students. We also claim that in order to be successful innovators in future business careers, students must develop a deep conceptual understanding of the underlying science ideas, an ability to apply these ideas and concepts broadly in different contexts, and a vision to see their relevance and usefulness in real-world business applications. An innovator is able to perceive and realize potential connections and opportunities better than others.

It goes without saying that creativity is an integral component of problem solving and of critical thinking skills. At the beginning of the 21 century there were introduced key principles of problem-based instruction (B.J. Duch, University of Delaware). In accordance with these principles, course instructors and educators should encourage students to seek, interpret, and synthesize their own information to the extent possible.

Our students have access to a variety of instructional formats, and active-learning experiences are incorporated throughout our materials [6]. These activities are interspersed among minilectures and practical seminars and give the students opportunities to apply new information to their existing base of knowledge. The active-learning activities emphasize the key concepts of the information provided to students and directly confront common misconceptions about finance, economics and globalization.

Weekly classes include question / answer / discussion sessions to address student misconceptions and 20-min minilectures on such topics as importance of social

protection, benefits gained from international trade, ideas of job insecurity, energy independence and cross-cultural interaction etc. Students gather information about these issues, sum them up and introduce their relevant comments and conclusions.

Although the proposed improvements noted above differ in detail, a remarkably consistent theme is the call to bring student-centered instructional strategies, such as active- and inquiry-oriented learning, into the classroom. We completely hold the opinion of D. Allen and K. Tanner who define active learning as «seeking new information, organizing it in a way that is meaningful, and having the chance to explain it to others» [1, p. 264]. This approach to learning and mastering new information emphasizes interactions with peers and instructors and involves a cycle of interactive activity and feedback where students are given consistent opportunities to apply their learning in the classroom context. By placing students at the center of instruction, this approach shifts the focus from teaching to learning and promotes a learning environment more amenable to the metacognitive development necessary for students to become independent and critical thinkers. Our university surveys and studies have proved that active-learning instructional approaches can lead to improved student attitudes and increased learning outcomes relative to a standard lecture format.

Our redesigned course of mastering English mainly implies the following pivotal concepts.

Reorder course content. We reordered the presentation of the course content in an attempt to teach specific content within the context of broad conceptual themes. For example, in a new textbook «Mastering English» we introduced new themes covering the issues of sustainable development, fashion and environment. New practical classes on societal sustainable development were presented. These classes were designed to both serve as an intellectual bridge between the sections of the course describing sustainable development and benefits gained in everyday life and also to help students understand complex production and consumption patterns and current changes in business approaches. All these ideas are supported with relevant video materials.

Active learning and group problem solving. We incorporated active and problem-based learning into every practical classes. Students are organized into small groups of four, asked to sit together throughout the semester, and in almost all task groups are

presented with a quantitative or conceptual problem: e.g.: based on the acquired information justify the importance of responsible purchasing; point out positive and negative aspects of introducing innovative techniques to improving malnutrition. Group problems are typically displayed on a PowerPoint slide, and the groups are given 10 min to work on the problem. During this period, the instructor is supposed to move from group to group in the classroom to monitor student progress and offer suggestions if a group encountered difficulty. The level of student activity can be clearly indicated by the noise level of student discussions in the classroom, which is monitored to determine when to bring the group work to a close. Carefully selected group representatives are then asked to report out to the class after each group problem-solving session. In addition to the examples, we can use a variety of active-learning exercises, including think-pair-share, 1-min papers, and concept maps.

A personal response system is also used to promote active learning in the classroom. Each seminar can include two to six so called «clicker questions» that are presented as multiple-choice questions on a PowerPoint slide. Generally, we develop the questions to address a specific concept covered in the textbook [3, pp. 204–206].

All above analyzed approaches are predominantly based on student-centered pedagogy. We adopted several additional strategies to create a more student-centered learning environment. Every practical lesson included a set of learning goals made explicit to students in the PowerPoint slides (covering grammar and vocabulary material). All exam and quiz questions are notably then labeled with the corresponding learning goals to emphasize the alignment of learning goals and assessment. We also included a set of vocabulary terms for each lesson to help the students focus on important concepts, and with the hope that students would use these economic / social / financial terms to formulate more precise and succinct answers to free-response questions on exams. We also place an increased emphasis on formative assessment by integrating assessment and self-assessment components into activities during our classes so that students would receive feedback designed to improve their performance. For example, virtually every group problem in the textbook included a component of formative assessment because we always discussed the answer to each problem in class and the group work problems closely resembled the problems in class. Finally, we can design several weekly quizzes

on our platform Moodle worth 10 points each, with only the top 10 scores applied to the final grade. These weekly quizzes thus provide regular feedback on student performance in an assessment environment and encourage students to keep up with the material on a regular basis.

Conclusion. Thus, we can conclude that active-learning pedagogies are intended to move classrooms toward more student-centered learning, and they engage students in knowledge construction. And as a consequence, it results in developing critical thinking, enhancing creativity and problem-solving skills. A variety of active-learning pedagogies have been implemented in the process of mastering English at practical classes at KNEU, ranging from quick, easily implemented strategies such as think–pair–share and minute papers to more complex strategies such as problem-based learning in organized groups.

However, there might arise some challenges to implementing active-learning pedagogies and embedding formative assessment into higher education classrooms. Variables such as class size and arrangement, as well as student motivation and engagement, potentially influence a strategy's outcomes.

Even when these strategies are used, maximizing student gains requires a student-centered pedagogical approach that few higher education faculties have had the opportunity to learn and practice.

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