B. BLOOM'S TAXONOMY AND ITS MODERN REVISED VERSIONS

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This article presents B. Bloom's Taxonomy which can be used during the leaning process to cultivate creative potential in future teachers of foreign languages in higher educational establsihments. The author gives a revised variant of this classification made by American scientists and the structure of observed learning outcome SOLO which can be utilized to assess the degree of creative potential of future teachers of foreign languages The article is illustrated with authors' quotes which describe the main positions of the paper.
Keywords: creativity, creative potential, taxonomy, observation, learning process.

Formulating of the problem. Both teaching and learning today are desperately in need of reconsidering. Practitioners and academicians have been researching and experimenting on bettering teaching and learning: education theories, teaching approaches, learning strategies. We are never short of resources, because globalization and information technology have enabled us to have access to almost whatever we want.

Instead, what we need now is how to make wise use of those resources in order to produce new thoughts, ideas and products, and to do that, people need to be able to evaluate and select from the vast ocean of resources. However, the ability of evaluating can only be acquired after the acquisition of the abilities of remembering, understanding, applying, and analyzing. And that process of learning to remember, understand, apply, analyze, and evaluate does not come easy. It takes knowledge, skill, and attitude. Any weak link among these categories would definitely result in failure of learning, and that's probably what most unsuccessful learnings share in common.

Analysis of the recent research and publictions. In the eighteenth century Abigail Adams stated that «learning is not obtained by chance, it must be sought for with ardour and attended to with diligence» [1]. The issue of creative and critical thinking and how it can enhance an academic process at a higher establishment has been of great interest to researches since the 1948 Convention of the American Psychological Association. A group of educators led by B. Bloom undertook a very sophisticated task to classify educational goals and objectives. They intended to develop a method of classification for thinking behaviours which will help to promote higher thinking in the classroom. This framework became taxonomy of three domains:

− the cognitive domain − knowledge based domain which consisted of six levels

− the affective domain − attitudinal based which consisted of five levels

− the psychomotor domain − skills based domain which consisted of six levels

In 1956 they published a handbook on cognitive domain known as Bloom's Taxonomy, after eight years of arduous work.

In 1990s, Bloom's student L. Anderson led an assembly aiming at updating this taxonomy and hoping to add relevance to 21st century teachers and students. This group of hard-working researchers spent years to finalize their work. They made some changes which seem to be quite important.

Contemporary scientists M. Forehand, M. Argiro, J. Ostin, W. Taylor are digging out cognitive and affective domains of Bloom's Taxonomy and Revised Bloom's Taxonomy in order to adopt them to academic and educational process and enable teachers to enhance teaching by incorporating creative and critical thinking into the classroom.

Though some believe that critical thinking is a dry-as-dust exercise in analysis [2] we assume that it can also enhance creative potential and call for creative thinking, for critical thinkers use imagination to give examples while remembering, understanding, applying, analyzing, synthesizing. And this work usually results in creating some original thought, idea or product.

Purpose of the article. This paper aims at summarizing Benjamin Bloom's original Taxonomy (1956) and its revised version as well as giving short explanation of SOLO taxonomy.

Presenting new material. What ability do graduates need to evaluate the surrounding environment, to select the appropriate information as well as to find original solutions in different complicated situations at workplace as well as in private life in this quickly changing world? The answer is creativity. A person who has a cultivated creative potential, who can think creatively and critically, accordingly, can ask appropriate questions, gather relevant information, creatively sort through this information, reason logically from this information and come to reliable conclusions and new solutions. In this context it is pertinent to speak about critical thinking skills or higher-order thinking skills enabling a future teacher of English, for example, to assess the consequences of low quality of teaching to find a novel way to increase it. Being a constituent of creative potential critical thinking enables an individual to be a responsible citizen to contribute to society but not be merely a consumer of society's aberration.

Cognitive Domain of Bloom's Taxonomy is a multi-dimensional stairway of six levels. The lowest three are knowledge, comprehension and application. These are believed to encourage a low level of a thought. The highest three levels are analysis, synthesis and evaluation. This classification is a hierarchy of subsuming levels which means that a student performing «analysis» level has also mastered at the «knowledge», «comprehension», and «application» [3] (Picture 1).

This classification has stood the test of time. It has been condensed, expanded, and reinterpreted in a variety of ways. Many researchers appreciated it, others criticized. In Bloom's words, «we intended the Taxonomy as a method of classifying educational objectives, educational experiences, learning processes, and evaluation questions and problems. We did not intend to

provide a constraint of educational philosophy, teaching methods, or curriculum development» [4].
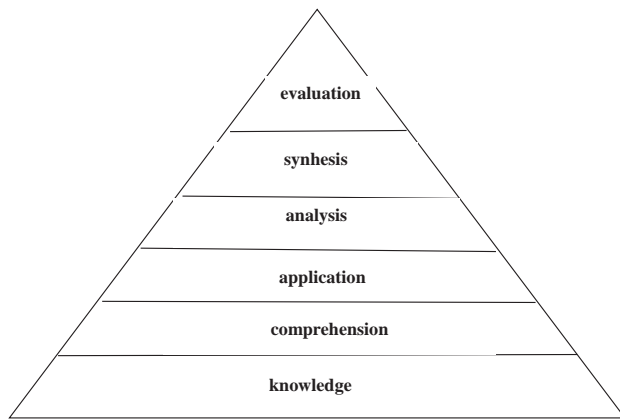
**Picture 1. Original Bloom's Taxonomy**

In our opinion, one revised version merits particular attention. In 2001 it was published and presented some changes in terminology. Bloom's major categories were changed from noun to verb -ing forms. Additionally, some levels were renamed: knowledge became remembering, comprehension became understanding, evaluation became creating. The new terms are defined as:

– **Remembering:** Retrieving, recognizing, and recalling relevant knowledge from long-term memory.

– **Understanding:** Constructing meaning from oral, written, and graphic messages through interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining.

– **Applying:** Carrying out or using a procedure through executing, or implementing.

– **Analyzing:** Breaking material into constituent parts, determining how the parts relate to one another and to an overall structure or purpose through differentiating, organizing, and attributing.

– **Evaluating:** Making judgments based on criteria and standards through checking and critiquing.

– **Creating:** Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing [3] (Picture 2).

A representative from Oregon State University Dianna Fisher designed the table of structural changes. The original cognitive taxonomy was one-dimensional one [5]. When to add behaviours to the Revised Bloom's Taxonomy, it becomes a table of two dimensions. One of the dimensions is The Knowledge Dimension (or the kind of knowledge to be learned) while the second is The Cognitive Process Dimension (or the process used to learn). Thus, the grid consists of twenty-four cells presenting the intersection of the knowledge and cognitive process.

The Knowledge Dimension on the left side is composed of four levels that are defined as Factual, Conceptual, Procedural, and Meta-Cognitive. The Cognitive Process Dimension across the top of the grid consists of six levels that are defined as Remember, Understand, Apply, Analyze, Evaluate, and Create. Each level of both dimensions of the table is subdivided.
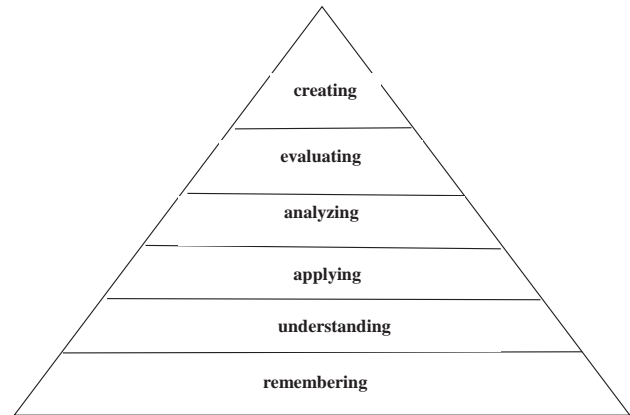
Picture 2. Revised Bloom's Taxonomy

Each of the four Knowledge Dimension levels is subdivided into either three or four categories (e.g. Factual is divided into Factual, Knowledge of Terminology, and Knowledge of Specific Details and Elements). The Cognitive Process Dimension levels are also subdivided with the number of sectors in each level ranging from a low of three to a high of eight categories. For example, Remember is subdivided into the three categories of Remember, Recognizing, and Recalling while the Understanding level is divided into eight separate categories. The resulting grid, containing 19 subcategories is most helpful to teachers in both writing objectives and aligning standards with curricular. The «Why» and «How» sections of this chapter further discuss use of the Taxonomy Table as well as provide specific examples of applications [3] (Table 1). World Wide Web presents clear evidence that Bloom's Taxonomy can be applied in many situations, especially during learning process. When stating one objective targeting Cognitive Domain for the lesson, a teacher can utilize this taxonomy, for example,

Having carefully studies and discussed the given grammatical material a student will be able to accurately use different subjects in six sentences of their own.

Another model that might prove to be useful to extend learning is the Structure of Observed Learning Outcome (SOLO) Taxonomy. This classification describes five levels of complexity in a learner's perceiving the subject. The use of this taxonomy enables both teachers and students to understand the learning process and to assess it. It consists of the following levels:

1) Pre-structural (the student does not understand the lesson);

Table 1

Table of Structural Changes

Bloom's Taxonomy						
The Knowledge Dimension	The Cognitive Process Dimension					
	REMEMBER	UNDERSTAND	APPLY	ANALYZE	EVALUATE	CREATE
Factual Knowledge	list	summarize	classify	order	rank	combine
Conceptual Knowledge	tabulate	predict	calculate	differentiate	conclude	compose
Meta-Cognitive Knowledge	appropriate use	execute	construct	achieve	action	actualize

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2) Uni-structural (the student has basic knowledge on the subject);

3) Multi-structural (the student possesses several concepts about the subject);

4) Relational (the student has mastered the subject);

5) Extended abstract (the student is able to create new thoughts, ideas) [6].

Conclusions and suggestions. Teaching content is not enough anymore. Much has been discussed about the 21st Century Skills (so-called the 4 C's − Communication, Collaboration, Critical Thinking and Creativity) as the set of knowledge, skills, work habits and character traits that are critical to be successful in today's world. These skills have also been integrated in language teaching/ learning in an attempt to guide language teachers. Teaching languages as we used to do (i.e. teaching grammar, vocabulary, pronunciation or teaching the four skills − listening, reading, speaking and writing) won't be so important in the future, since it is possible that a lot of this will be learned through technology. So, teacher's role is changing − it will be our responsibility to guide students through the acquisition of the broader, more complex skills, seen as universal and relevant to any field of knowledge. That's where the presented taxonomies come in: they provide us with the tools, the path, the parameters to help students.

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ТАКСОНОМІЯ Б. БЛУМА ТА ЇЇ СУЧАСНІ МОДИФІКАЦІЇ

Анотація
Стаття презентує таксономію Бенджаміна Блума, що може використовуватися в навчальному процесі для формування творчого потенціалу майбутніх викладачів іноземних мов у вищих навчальних закладах. Автор наводить видозмінений варіант даної класифікації, зроблений американськими вченими та схему спостереження SOLO за досягненнями студента, що може використовуватись при оцінюванні рівнів сформованості творчого потенціалу майбутніх викладачів іноземних мов. У статті наводяться цитати авторів, що ілюструють загальні положення статті.
Ключові слова: творчість, творчий потенціал, таксономія, спостереження, навчальний процес.

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ТАКСОНОМИЯ Б. БЛУМА И ЕЕ СОВРЕМЕННЫЕ МОДИФИКАЦИИ

Аннотация
Статья представляет таксономию Бенджамина Блума, которая может использоваться в учебном процессе для формирования творческого потенциала будущих преподавателей иностранных языков высших учебных заведениях. Автор приводит видоизмененный вариант данной классификации, сделанный американсккими учеными и схему наблюдений SOLO за достижениями студента, которая может использоваться при оценивании уровней сформированности творческого потенциала будущих преподавателей иностранных языков. В статье приводятся цитаты авторов, которые иллюстрируют общие положения статьи.
Ключевые слова: творчество, творческий потенциал, таксономия, наблюдения, учебный процесс.

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