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DEVELOPING AND INCORPORATING CRITICAL THINKING IN E-LEARNING

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Abstract. The present world demands innovative approaches of development in all spheres of life, and in education in particular. The changing world requires changes in methods and tools of teaching and learning. Digital technologies that have been developing fast, urge educators to apply them in educational processes. For Kyrgyzstan, the introduction of the variety of digital technologies, as well as e-learning tools means a qualitative change in the education system and provision of new educational opportunities for everyone, and for the country as a whole - the growth of intellectual and social capacity. Therefore, educators have to think over the proper use of the technologies in teaching and learning processes, so that students could also develop their critical thinking that is considered to be one of the important and necessary skills of the 21st century. The major objectives of the present paper are 1) to analyze innovative approaches that would promote critical thinking and develop lifelong learning skills, 2) to study how to incorporate these skills into educational programmes, 3) to demonstrate how Kyrgyz-Turkish Manas University is applying and realizing the full potential of eLearning in its educational process with the help of Kyrgyz Research and Education Network Association (KRENA) that provides broadband internet connection.

Keywords: critical thinking skills, E-learning, digital technologies, teaching/learning.

РАЗВИТИЕ И ВНЕДРЕНИЕ КРИТИЧЕСКОГО МЫШЛЕНИЯ В ЭЛЕКТРОННОЕ ОБУЧЕНИЕ

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Абстракт. Современный мир требует инновационные подходы для развития всех сфер, и в частности образования. Меняющийся мир требует изменений в методах и подходах преподавания. В связи с быстро развивающимися цифровыми технологиями, педагогам также приходится не отставать и применять их в образовательных процессах. Для Кыргызстана внедрение разнообразных цифровых технологий, а также применение инструментов электронного обучения означает качественное изменение системы образования и предоставление новых образовательных возможностей для каждого, и для страны в целом. Таким образом, преподавателям необходимо правильно подойти к выбору технологий обучения для развития критического мышления, которое является одним из важных и необходимых навыков XXI века, у студентов. Основными задачами статьи являются: 1) анализ инновационных подходов, способствующих развитию критического мышления, а также вместе с тем приобретение и развитие способностей, знаний, квалификации и интересов на протяжении жизни; 2) рассмотрение способов внедрения этих навыков в образовательные программы. Для реализации поставленных задач требуется широкополосное интернет-соединение для образовательных учреждений, которое обеспечивается Ассоциацией «Кыргызская Научная Образовательная Компьютерная Сеть» (КНОКС).

Ключевые слова: навыки критического мышления, электронное обучение, цифровые технологии, преподавание / изучение.

ЭЛЕКТРОНДУК ОКУТУУДА СТУДЕНТТЕРДИН СЫНЧЫЛ ОЙ ЖҮГҮРТҮҮСҮН ӨНҮКТҮРҮҮ ЖАНА ЖАЙЫЛТУУ

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“It is not so very important for a person to learn facts. For that he does not really need a college. He can learn them from books. The value of an education in a liberal arts college is not the learning of many facts, but the training of the mind to think something that cannot be learned from textbooks.” - Albert Einstein (Frank, Rosen, & Kusaka, 1947). One of the main goals of education is to up-bring an individual who will be able to think critically, who will possess all the skills that help survive in a competitive and highly developed technological world. We, educators, would like our students be able to deal with real life problems, like “assessing information and arguments in social context and making life decisions … We also want students to be more creative – not simply to reproduce old patters but to respond productively to new situations, to generate new and better solutions to problems, and to produce original works.” (Bailin, 1987).

Regarding the importance of developing not only critical, but also creative thinking of students, Anastasiades points out the collaborative creativity with the use of information and communication technologies (ICT), as one of the important tools that under proper pedagogical conditions help educators and students develop cognitive, social, and technological skills, and respond critically to the requirements and demands of our times (Anastasiades & Zaranis, 2017).

So, prior delivering a course an instructor needs to think over how the goals and objectives of the course are interrelated and how to verify whether those goals are reached. This issue was studied by Benjamin Bloom, American educational psychologist. He developed a theory "Taxonomy of educational objectives: The Classification of educational goals" where the professor designed a hierarchy of educational goals involving cognitive domain and described the levels of human thinking process, which in turn reflect goals and objectives of any course. (https://www.learningclassesonline.com/2019/08/blooms-taxonomy.html)
(Fig.1)

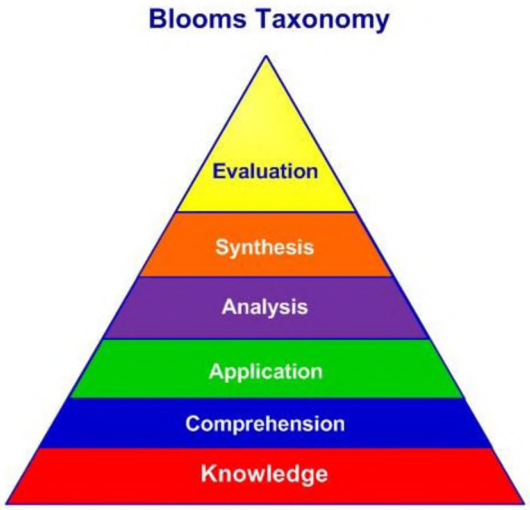

Fig.1 Bloom's taxonomy

As it is seen in the Figure (1), the goals and objectives of education are dependent on the hierarchy of thinking processes: remembering, understanding, applying, analyzing, evaluating/synthesis, and creating. There have been various discussions regarding the taxonomy, both negative and positive but still it is considered relevant nowadays. The taxonomy is applied not only in traditional education, but also in new models that involve interactive education with the use of ICT.

The changing world requires changes in methods and tools of teaching and learning. Digital technologies that have been developing fast, urge educators to apply them in educational processes. The introduction of the variety of digital technologies, as well as e-learning tools means a qualitative change in the education system and provision of new educational opportunities for everyone, and for the country as a whole - the growth of intellectual and social capacity. Therefore, educators have to think over the proper use of the technologies in teaching and learning processes, so that students could also develop both their critical and creative thinking.

Based on the Bloom's taxonomy, Allan Carrington designed a model, "Pedagogical Wheel" (Fig.2) where the designer proposed his idea of using developed applications that would fit those thinking levels reflected in the taxonomy.

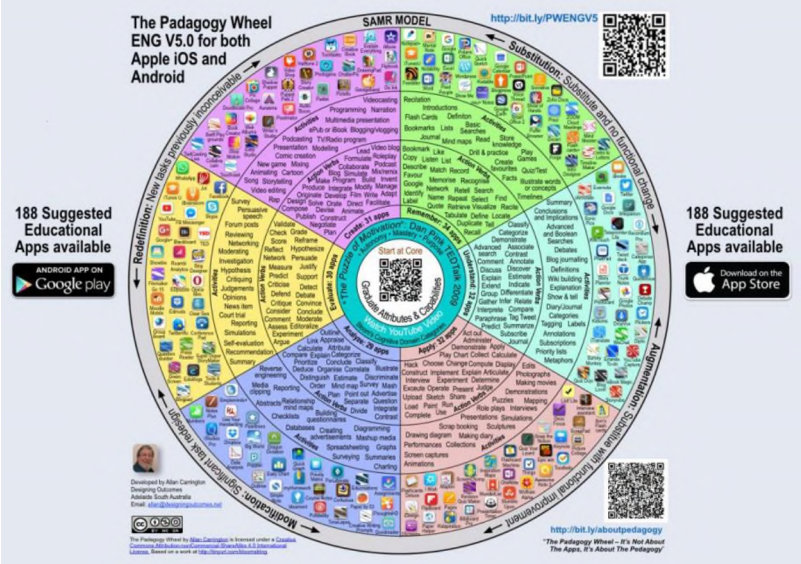

Figure.2 Pedagogical Wheel/

As we see in Fig. 2, Carrington's model gives detailed description of action verbs and activities covering all education goals accompanying with a set of various developed digital tools (applications). For example, the applications, like Creative Book Builder, Interview Assistant, Aurasma, Fotobabble, iMovie, WordPress, Skype, Tapose, Google+, Student Pad (most of these apps are available at official sites), best fit the last 3 top levels (the ability to evaluate, analyze, and create) in the Bloom's taxonomy. (https://designingoutcomes.com/english-speaking-world-v5-0/)

So, the Bloom's model helps educators develop educational goals, that would ensure the realization of the higher level of thinking (development of creative and critical thinking). As far as the Clarington's model, it helps educators efficiently use new e-learning tools to promote the quality of education.

So, what are those innovative approaches, taking into account the models proposed by Bloom and Clarington, which would promote critical thinking?

Bloom's Taxonomy, if applied to e-learning, reveal opportunities to teachers to understand the different levels of cognitive demands of students and match digital tools with the different levels of learning objectives. Here are the ways we have applied Bloom's Taxonomy to our e-learning course on Text Analysis.

1. Knowledge (Receiving information)

The first level of Bloom's Taxonomy is one of the easiest to implement in the e-learning environment. It is connected with giving students the knowledge on the main topics, in our case the Text Analysis course. The main point here is to follow the right steps in delivering information and use effective innovative approaches (learner-centered, web-based, interactive, collaborative, etc.) and activities (online-guided discussion, WebCT, etc.) to make students think critically and creatively. At this stage teachers can make use of eLearning components like videos, images, open educational resources on virtual platform (Linguistic Platform www.ling.manas.edu.kg) (Fig.3), which is available inside and outside the campus of Kyrgyz-Turkish Manas University via broadband internet provided by KRENA (Kyrgyz Research and Education Network Association).

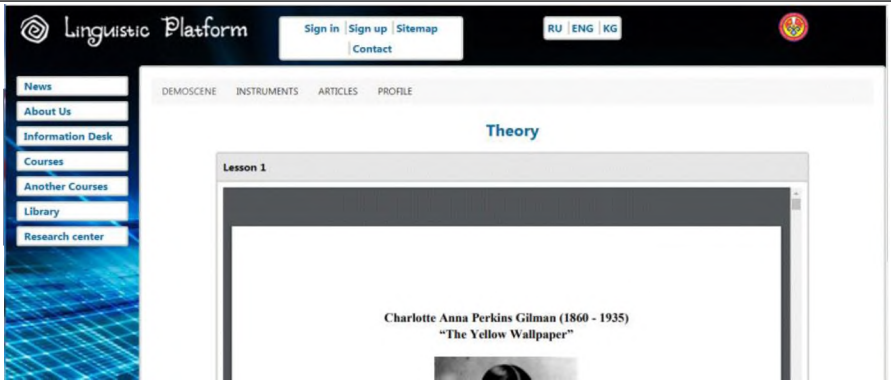

Figure 3. Linguistic Platform www.ling.manas.edu.kg

2. Comprehension (Think critically)

In this stage instructors test students' comprehension with a help of online tests, quizzes, strategic questioning, one minute papers (main point, most confusing area topics, etc.) which develop their capacity to think outside the box. Here it is important to note that receiving information and knowing something is not the same with understanding. Also every Learning Management System (LMS) usually has its own flexible testing tools. So, the teachers have an opportunity to adapt the questions according to their students' abilities and demands. This level should be applied in learning the main concepts, techniques or critical skills to make sure that the students have absorbed the knowledge.

2. Application (Practice)

This level requires an effort from the teacher to help students apply their knowledge into practice. The instructors have to provide them with practical exercises, web-based simulations, role-plays, and branched scenarios to help them interact well with the course. Teachers need to simulate real-life situations and problems to make the students apply the acquired knowledge to find the solutions to the problems by using their critical and creative thinking skills. Also, teachers can provide collaborative works and online guided discussions to teach the students put existing ideas together in a new combination. Application of the knowledge is the most powerful component, which promotes qualitative change in the education system.

4. Analysis and synthesis (Explore)

Analysis and synthesis is the next step which is beyond simply receiving and applying the knowledge. Online testing and quizzes can be used as before, but the main tool in analysis is critical thinking skill. Teachers can make use of social platforms like online forums, chats and wikies to analyze a strong understanding of the course and encourage students to interact with each other and share knowledge. It helps students to develop stronger knowledge regarding the particular topic.

5. Evaluation (Assessment and creation)

The final point outlined by Bloom's Taxonomy is the evaluation stage. Based on the analysis, at this stage students have enough knowledge of the subject matter to start acting as tutors, i.e. peer-tutoring or e-mentoring. It can become the catalyst for real cultural change and development of learner's problem-solving skills. Also this stage requires right digital tool to make the accurate assessment and achievement of all course objectives.

In conclusion, in order to achieve the best results educators need to follow each cognitive domain of Bloom's Taxonomy that does not just simulate learning, but develops students' critical thinking skills. Each domain in the Taxonomy implies the development and promotion of critical thinking skills and helps students reach advanced learning goals.

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