3. Игленкова, М.Г. Физико-химические закономерности получения композиционных материалов на основе фосфогипса: Автореф. дисс. … канд. хим. наук. – Саратов, 2013.
4. Овчаренков, Э.А. Возможность использования промышленных отходов в строительной индустрии // Региональная архитектура и строительство. – 2011.

УДК 378.881.1

РОЛЬ ИННОВАЦИОННЫХ ТЕХНОЛОГИЙ В ОБУЧЕНИИ ИНОСТРАННОМУ ЯЗЫКУ

THE ROLE OF INNOVATIVE TECHNOLOGIES IN TEACHING A FOREIGN LANGUAGE

Миронова Е.О., преподаватель,
Белорусский национальный технический университет, Минск, lizamiiron@gmail.com
Lizaveta Mironava, teacher,
belarussian natioan technical university, Minsk, lizamiiron@gmail.com

Аннотация. В современном обществе инновационные технологии присутствуют в широком ряде различных сфер. Внедрение образовательных технологий, которые развиваются быстрыми темпами, требует профессионализма и готовности преподавателей к освоению новейших информационных технологий. Использование электронных ресурсов в образовательном процессе в высшей школе может способствовать как развитию профессиональных навыков, так и получению опыта использования онлайн-среды.

Ключевые слова: образование, инновационные образовательные технологии, обучающие технологии, образовательные платформы.

Abstract. In modern society, innovative technologies are present in a wide range of different areas. The introduction of educational technologies, which are developing at a rapid pace, requires the professionalism and readiness of teachers to master the latest information technologies. Using of different electronic resources in the educational process at universities can contribute both to the development of professional skills and to gaining experience in using the online environment.

Key words: education, innovative educational technologies, educational technologies, electronic educational platforms.

Introduction. Using of modern innovative tools in teaching students certainly facilitate and improve the preparing of future employees.

The most important goal is to change the collection, access, analysis, presentation and communication of information by students and teachers. The theory of innovation in education is a new area of education science, which has three parts: the creation of new products, their development and application. Innovation processes are considered mainly in three aspects – socio-economic, psychological and organizational and normative. Thanks to these aspects, the general climate and conditions are determined, where the development of innovative processes takes place, and which are capable of either hindering or facilitating the process of innovation. Besides, innovation process is not spontaneous, but consciously regulated. [2, 5]

Main part. Introduction of innovative innovations in education represents the creative process of exploring and learning new ideas and principles, which then lead to their successful adaptation and application. As a rule, two types of innovative phenomena are distinguished: pedagogical innovation theory (innovation in the education system) and innovative learning. The first phenomenon includes the restructuring and modification of individual parts in the system of education, and the second – innovative learning – is a special form of

knowledge acquisition, which results in conscious and motivated activities in the learning process. It also stimulates innovative change in existing social and culture environment. This type of learning acts as an active response to particular problem situations that may arise in students. [6, 7]

Because of high requirements for the professional competence of future managers, we can notice the widespread using of modern technical tools in education. At the same time, a sufficient number of electronic resources allows you to create online games, web quests, tests, puzzles that provide both an increase in motivation for students to learn and the development of information competence necessary for every qualified manager.

What give us the using of different technologies? For example, with a large and accessible database of students, it is possible for teachers to track the individual progress, and also determine learning goals and implement a differentiated approach, depending on the needs of students. Teachers also have the opportunity to develop further lesson plans, taking into account the level of student learning and success implementation of innovative technologies. Thanks to innovation there is an opportunity to narrow the achievement gap, to increase national competitiveness and stimulate economic growth.

In addition, innovative educational technologies are closely related to improving the effectiveness of education and upbringing, which aim at the following result: highly qualified specialists who have fundamental theoretical and applied knowledge; graduates can successfully and easily master new, professional and managerial fields in order to show prompt response and successful adaptation to rapidly changing social and economic conditions; students are endowed with high moral and civic qualities in an innovative educational space. [1]

In the modern world, there are many educational platforms that can be integrated into the learning process. For example, Goosechase, Kahoot, Quizlet, Google classroom, etc. These resources allow you to develop various online games within a particular specialty.

Unlike the Kahoot platform, which is used for the ongoing assessment of student knowledge (Glowacki et al, 2018), an online game on the Goosechase platform gives students the opportunity to express their creativity and increase motivation for learning activities. Taking into account the potential of computer games, which give students the opportunity to play an active role in learning, develop their ability to solve problems or learn a subject through practical use. The introduction of electronic learning tools in the higher education system contributes to effective communication, visibility and accessibility of the educational process. [2, 3]

Taking into account the learning goals and competencies of future specialists, teachers can choose various tools for the current assessment of students' knowledge and the level of learning material, namely: web quests, tests, online games, puzzles, etc.

Conclusion. The rapidity of technological progress, the digitalization of modern society, the involving of modern tools require modernization of the content of education and an adaptive response of the teaching staff to the challenges of our time. [4] At the same time, a high standard and competitiveness in the labor market are high criteria that apply to the learning process at universities. In particular, information competence, critical thinking, mobility, the ability to quickly respond to a crisis situation, the ability to learn independently should be improved at the university along with the development of professional skills.

ЛИТЕРАТУРА

1. Использование информационно-коммуникационных технологий в процессе преподавания курса по выбору «Трендспоттинг и профессиональное будущее современного специалиста» / О. Р. Алексеева [и др.] // Інформаційні технології і засоби навчання. – 2019. – Т. 72, № 4 – С. 149–150.

2. Тульчинский, Г. Л. Цифровая трансформация образования: вызовы высшей школе / Г.Л. Тульчинский // Философские науки. – 2017. – № 5. – С. 121–136.

3. Turner, P. Heflich Influence of online computer games on the academic achievement of nontraditional undergraduate students / P. Turner [et al.] // Cogent Education. – 2018. – Vol. 5, iss. 1. – P. 1–16.

4. Huang, Y. M. Exploring students' acceptance of educational computer games from the perspective of learning strategy / Y. M. Huang // Australasian Journal of Educational Technology. – 2019. – Vol. 35, iss. 3. – P. 132–147.

5. Glowacki, J. Gamification in higher education: experience of Poland and Ukraine / J. Glowacki, Y. Kriukova, N. Avshenyuk // Advanced Education. – 2018. – iss. 10. – P. 105–110.

6. Прохорова, М. П. Инновационная деятельность преподавателя вуза как фактор качества педагогического образования / М. П. Прохорова, А. А Семченко [Электронный ресурс]. – Режим доступа : https://cyberleninka.ru/article/n/innovatsionnaya-deyatelnost-prepodavatelya-vuza-kak-faktor-kachestva-pedagogicheskogo-obrazovaniya. – Дата доступа : 25.11.2022.

7. Дубонос, С. М. Инновационная деятельность преподавателя вуза [Электронный ресурс] / С. М. Дубонос, А. П. Мироненко // Молодой ученый. – 2018. – № 30 (216). – С. 61–63. – Режим доступа : https://moluch.ru/archive/216/52212/. – Дата доступа : 25.11.2022.

УДК654.028.3

АНАЛИЗ ШИНЫ K-LINE, КАК ПЕРВОИСТОЧНИКА ПАРАМЕТРОВ ДЛЯ ОБЩЕГО И ПОЭЛЕМЕНТНОГО ДИАГНОСТИРОВАНИЯ

ANALYSIS OF THE K-LINE BUS AS THE PRIMARY SOURCE OF PARAMETERS FOR GENERAL AND ELEMENT-BY-ELEMENT DIAGNOSTICS

Гурский А.С., кандидат технических наук, доцент, Белорусский национальный технический университет, г. Минск, asgurski@bntu.by
Седяко П.В., аспирант, Белорусский национальный технический университет, г. Минск, pavel_cooller23@mail.ru,
Gursky A.S., candidate of technical sciences, associate professor
Belarusian National Technical University, Minsk, asgurski@bntu.by
Sedziaka P.V., graduate student.
Belarusian National Technical University, Minsk, pavel_cooller23@mail.ru

Аннотация. В данной статье основное внимание уделяется описанию особенностей шины K-line полученных в ходе разработки и демонстрации устройства для чтения и получения диагностических данных ЭБУ с версией ПО Январь 5.1. Результаты проделанной работы могут быть полезны для обучения, диагностирования, а также проведения исследований при работе с K-line или схожими шинами передачи данных.

В качестве аппаратного обеспечения были использованы: микроконтроллер ArduinoNano и преобразователь уровней на основе сдвоенного компаратора LM 293. Программное обеспечение было разработано с использованием среды ArduinoIDE, в которой была написана программа для отправки различных запросов ЭБУ (чтение текущих параметров, кодов ошибок, удаление кодов ошибок) и получения ответов с их последующей расшифровкой. Для экспериментов и анализа демонстрационного испытания, собранное устройство было подключено к учебному стенду НТЦ-15.40.1 «Система питания двигателя с распределенным впрыском топлива».

Ключевые слова: K-line, программирование, Ардуино, расшифровка данных.