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NAS RK is pleased to announce that Bulletin of NAS RK scientific journal has been accepted for indexing in the Emerging Sources Citation Index, a new edition of Web of Science. Content in this index is under consideration by Clarivate Analytics to be accepted in the Science Citation Index Expanded, the Social Sciences Citation Index, and the Arts & Humanities Citation Index. The quality and depth of content Web of Science offers to researchers, authors, publishers, and institutions sets it apart from other research databases. The inclusion of Bulletin of NAS RK in the Emerging Sources Citation Index demonstrates our dedication to providing the most relevant and influential multidiscipline content to our community.

Қазақстан Республикасы Ұлттық ғылым академиясы «ҚР ҰҒА Хабаршысы» ғылыми журналының Web of Science-тің жаңаланған нұсқасы Emerging Sources Citation Index-те индекстелуге қабылданғанын хабарлайды. Бұл индекстелу барысында Clarivate Analytics компаниясы журналды одан әрі the Science Citation Index Expanded, the Social Sciences Citation Index және the Arts & Humanities Citation Index-ке қабылдау мәселесін қарастыруда. Web of Science зерттеушілер, авторлар, баспашылар мен мекемелерге контент тереңдігі мен сапасын ұсынады. ҚР ҰҒА Хабаршысының Emerging Sources Citation Index-ке енуі біздің қоғамдастық үшін ең өзекті және беделді мультидисциплинарлы контентке адалдығымызды білдіреді.

НАН РК сообщает, что научный журнал «Вестник НАН РК» был принят для индексирования в Emerging Sources Citation Index, обновленной версии Web of Science. Содержание в этом индексировании находится в стадии рассмотрения компанией Clarivate Analytics для дальнейшего принятия журнала в the Science Citation Index Expanded, the Social Sciences Citation Index и the Arts & Humanities Citation Index. Web of Science предлагает качество и глубину контента для исследователей, авторов, издателей и учреждений. Включение Вестника НАН РК в Emerging Sources Citation Index демонстрирует нашу приверженность к наиболее актуальному и влиятельному мультидисциплинарному контенту для нашего сообщества.

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INTEGRATION OF DIGITAL AND PEDAGOGICAL TECHNOLOGIES IN THE PROCESS OF TEACHING STUDENTS OF SOCIO-ECONOMIC AND PEDAGOGICAL AREAS OF TRAINING

Abstract: This study examines how to integrate the benefits of role-playing, collaborative and interactive learning, and realistic case studies in a virtual environment. The article describes the experience of implementing an educational model based on the online virtual reality platform Second Life (SL), which provides students with the opportunity to participate in role-playing games, interactive learning, and social interaction in the learning process. The proposed model consists of three modules: the module for the preparation of information, joint modeling, a reflexive module that provides practical skills by participating in a 3D game. Students and teachers who participated in the testing of the model gave a positive assessment.

The main goal of developing an educational model that's based on Second Life is to improve the educational process, using the advantages of role-playing games, collaborative and interactive learning, as well as realistic cases in a virtual environment. This can be achieved using three modules: an information preparation module, a joint simulation module for studying the situation, and a reflexive module.

Unlike some virtual educational systems, this model is specifically designed to help students understand the causes of problems and how to solve them through data visualization and simple modeling, easy communication, flexible interaction, collaboration, and immersion in the SL environment. By integrating the three modules in the SL environment, the model will provide more opportunities for effective collaborative learning in various fields of knowledge.

In the information preparation module, teachers and students use moving avatars to perform all the actions presented in the demo virtual room in SL with the support of the Semantic Wiki Template. This template provides the platform with sections of information on the studied subject. Using it, teachers can easily pass practical tasks to the student, while students can respond and present results without having any deep training in the field of information technology.

Key words: online learning, interactive learning, virtual reality, digital and pedagogical technologies, online classroom.

Introduction. Attempts to integrate technological innovations into the learning process have accompanied the development of education since the beginning of the 20th century. In recent decades, the popularity of computer games has led researchers to study the way of learning through games [2]. The use of multi-user virtual environments (MUVES) for training has sparked a wide discussion in recent years. MUVE has been around since the late 1970s when they were still based on text. Thanks to constant advances in computer and network technology, simple text-based MUVE has evolved into real-world-like, three-dimensional virtual worlds in which multiple users can participate simultaneously,

interacting with each other and the environment through their graphical representations, known as avatars. In the past two decades, 3D MOVIES have been increasingly studied for their use in education [1]. On the one hand, millions of dollars have been invested in the development of educational MUVES, such as Harvard University's Rive City and Indiana University's Quest Atlantis, on the other hand, some existing MUVES have been researched, evaluated, and adapted for educational purposes. Second Life is currently the most Mature and popular 3D MUVE used in education [5]. SL is an interactive and exciting environment that provides seamless information exchange, communication support,

and supports group discussions and collaboration between participants [3]. SL adapted innovations that appeared in social networks: simple profile creation, a circle of friends, opportunities for public and private distribution of messages, new media elements [6]. All this provides optimal conditions for the development of experimental pedagogical [4].

Analysis of publications. The development of information technologies depends on the need to reveal the concept of digital literacy, no matter how users react to the needs and demands of life in the modern technological, computer, information or digital era. It must be said that the evolution of the concept of literacy, which occurred in accordance with the technological development of society, goes back to the sixties of the last century. From that time to the present, the concept of literacy has undergone several stages of development: from visual literacy (Debes, 1968; Avgerinou & Erickson, 1997; Considine, 1986), over technology (Dakers, 2006), media (Aufderheide, 1993; Buckingham, 2003; Kellner, 1998) and computer literacy (Deringer & Molnár, 1982;), then information (Bruce, 1997) and digital literacy (Bawden, 2001, 2008; Belshaw, 2012), to the concepts of multiplicity (New London Group, 1996; Cope Kalantzis, 2000) and multiple literacy (Kellner, 1998; 2002). The emergence of new concepts of literacy was pointed out by Spencer in the eighties (Spencer, 1986). [9]

The term "literacy" is used to represent a large number of different practices, and today almost every knowledge or training that is considered to have educational value can be understood as literacy.

Thus, the term "literacy" can be used as a metaphor for competence, experience, or functionality, or can be used in a way that suggests a close relationship with language.

For example, if someone is said to be a computer or a technically literate person, then usually we want to denote their skill, ability, experience or functionality in using computers or any other second device. In contrast to meanings, concepts such as information literacy or media literacy indicate a closer connection with language and highlight the ability to communicate or create meaning (the use of signs, signals, codes, images...)

With the knowledge gained from the previous section, in the joint modeling module, each group participates in creating a 3D model of the case for a better understanding of its essence. The module consists of three stages: setting tasks, joint modeling, and checking the 3D model.

In the beginning, the group leader defines and sets a simulation task for each student in the group. Next, each student will create a separate three-dimensional part of the entire model and integrate it with the rest using modeling software. SL provides collaborative and interactive virtual spaces, making the collaborative modeling process faster than ever. In the end, the teacher checks and corrects errors in the 3D model if necessary.

In this module, students can play an active role in obtaining information during the three-dimensional modeling procedure. Besides, it will help students not only fully understand the case scenario, but also improve their analysis skills. After completing the simulation tasks, all students go to the reflexive module, where they study the lecture material and participate in a game of knowledge testing. The module as a whole consists of three stages.

The first step is lectures on the studied subject, prepared by the teacher. The teacher, using a communication audio channel and a virtual SL environment, explains the material to students using examples of previously reviewed cases. The digital environment and virtual reality provide more effective and efficient delivery of educational material to students. After the lectures are over, the teacher modifies the 3D model to create scenarios for testing students' knowledge. Students should indicate their reaction to the causes of the problem and the solutions discussed in the previous module.

In the end, students pass the final certification procedure for the discipline in the format of a test 3D game, in which they must use their mobile avatars, identify and solve the problem.

To get information about the results of learning, the teacher looks at the electronic checklist. In conclusion, the data from the checklist and the video recording are sent to the student for analysis.

The results of the research. The main characteristic of the new socio-cultural context is that digital technologies have become an integral part of all aspects of modern life – learning, communication, work and leisure. In such conditions, the need for proper use of digital technologies becomes important, along with the development of competencies that meet the requirements of a digital, networked and knowledge-intensive society.

Thus, digital literacy is seen as a "life skill", and along with reading, writing and math literacy. These circumstances in the context of education raise a number of questions and dilemmas for educational policy and science, researchers and practitioners, lead to new insights, rethinking existing concepts and creating new phenomena. Accordingly, this article discusses what new skills and competencies are needed to fully participate in the digital society; what was the reason and how the concepts of literacy were revised; as well as where and how to develop new skills and competencies, that is, digital literacy.

Based on these questions, the subject and purpose of this study were derived in order to study the role of the university and teachers in the development of digital literacy of students, i.e. to study the features of the practice of developing digital literacy in the context of existing conditions, as well as the possibilities of its improvement.

The results of the study show that there are differences in students' and teachers' understanding of the concept of digital literacy and that it is impossible

to conclude that there is a digital gap between the main participants in the educational process. The importance of formal education for the development of digital literacy has been recognized, and digital literacy is seen as an interdisciplinary competence.

The results showed that the practice of developing digital literacy as this interdisciplinary competence is not well established, although there is a practice of using digital technologies in the educational process. It is established that the practice of development of digital literacy can be predicted on the basis of skills of teachers on use of digital technologies in teaching, the number of visited courses digital technologies, and based on the climate in educational organizations of higher education, that is, how is the support for universities and teachers to use digital technologies in teaching.

When defining digital literacy, it often comes into relationship with information, computer or ICT literacy, or with a set of new literacy. There are many works on the topic of digital literacy, in which different authors do not always emphasize the same knowledge and skills, consensus on one definition, it looks elusive (Bawden, 2001; 2008; Belshaw, 2012; Hagel, 2015; Lankshear. In addition, the concept of digital literacy is dynamic, it changes in accordance with the development of digital technologies, and its understanding depends on both the context and the discipline. It is argued that there are several key factors that contribute to confusion in understanding the concept of digital literacy, which boils down to the following: this concept is based on different definitions of " literacy "(informaciona, media files and IKT literacy) that have emerged within different traditions of practice (library, communication, information and communication technologies). The meaning and definition of this concept depends on the role played in educational policy in terms of promoting development and the definition of the term digital literacy. [9]

To improve understanding of the perspectives and limitations of the proposed model, we surveyed teachers and students who participated in the testing. The vast majority of students expressed satisfaction with the classes in the proposed format. Students especially noted the final 3D test game, emphasizing its realism and usefulness in gaining practical experience.

However, students also noted some difficulties in joint modeling when integrating complex elements and complex scenarios into SL.

The teachers were generally satisfied with the proposed method of teaching. They stressed that the role-playing elements and social interaction of SL will contribute to improving the efficiency and effectiveness of life safety training. However, the majority of teachers noted that the training scenarios of the game take a lot of time (at least two days for a single scenario).

The information preparation module includes four main stages. The first stage is scenario selection: teachers who are experts in their subject area upload tasks for students to analyze the case and find solutions using a template in the showroom.

The second stage is the preparation of the material and information communication: students of the online class are divided into groups. Each group solves one task set by the teacher. At this stage, all members of each group collaborate by discussing the relevant theories and then generalizing them. Each participant's tasks will be determined through social interactive discussion and audio communication between group members in a virtual SL environment.

At the third stage, case analysis is carried out: on the basis of data collection, each student identifies the causes of the problem, as well as suggests ways to solve it.

All ideas are fixed on the boards that are available in the showroom. After all the ideas are published, all members of the group discuss them through their avatars and vote for the best answer, using the voice chat and virtual reality SL capabilities. The ideas with the highest number of votes are saved in the template. At the fourth stage, the results are evaluated and confirmed, where the result of the analysis of each group is evaluated by their teacher.

Conclusion. The above-mentioned authors point out that here we are talking about a change associated with the progress in digital technologies and the emergence of so-called "post-typographic" forms of texts.

Changes in digital technologies are transforming existing social practices and creating new ones, which include new ways to create, distribute, exchange and receive multimodal forms of texts by electronic means in the form of digital codes that carry sound, text, images, video, animation or a combination of these forms. It includes a new kind of " technical characteristics " in contrast to conventional literacy – for example: screens and pixels instead of paper, digital codes instead of printed material, and multimodal forms of texts transmitted electronically in real time.

Thus, the proposed model creates a potentially powerful and attractive learning environment, using the advantage of virtual reality and social networks. With it, students will be able to better understand the studied discipline, while the teacher can link theories with practical experience and give this knowledge to the student. This model is considered by us as universal in relation to academic disciplines. The model was tested at the Moscow State Institute of tourism industry named after Yu. A. Senkevich, the Institute of communication technologies, the Moscow Institute of linguistics in training in such disciplines as Russian as a foreign language, life safety, English, and personnel management.

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СТУДЕНТТЕРДІ ДАЯРЛАУДЫҢ ӘЛЕУМЕТТІК-ЭКОНОМИКАЛЫҚ ЖӘНЕ ПЕДАГОГИКАЛЫҚ БАҒЫТТАРЫН ОҚЫТУ ПРОЦЕСІНДЕ ЦИФРЛЫҚ ЖӘНЕ ПЕДАГОГИКАЛЫҚ ТЕХНОЛОГИЯЛАРДЫ ИНТЕГРАЦИЯЛАУ

Аннотация: Бұл зерттеуде рөлдік ойынның, бірлескен және диалогтық оқытудың, сондай-ақ виртуалды ортада шынайы кейстердің артықшылықтарын біріктіру мүмкіндігін анықтау қарастырылады. Мақалада Second Life (SL) виртуалды шындықтың онлайн-платформасы базасында білім беру моделін енгізу тәжірибесі сипатталған, ол студенттерге рөлдік ойындарға қатысу, интерактивті оқыту және оқу үдерісінде әлеуметтік өзара іс-қимыл мүмкіндігін қамтамасыз етеді. Ұсынылған модель үш модульден тұрады: ақпаратты дайындау модулі; бірлескен модельдеу; 3D-ойынға қатысу арқылы практикалық дағдыларды алуды қамтамасыз ететін рефлексивті модуль. Модельді апробациялауға қатысқан студенттер мен оқытушылар жалпы оң баға берді.

Second Life негізіндегі білім беру моделін әзірлеудің негізгі мақсаты рөлдік ойын, бірлескен және диалогтық оқыту, сондай-ақ виртуалды ортадағы шынайы кейстерді пайдалана отырып, оқу процесін жетілдіру болып табылады. Бұл үш модульдің көмегімен қол жеткізуге болады: ақпаратты дайындау модулі, жағдайды зерттеу үшін ортақ модельдеу модулі және рефлексивті модуль.

Кейбір виртуалды Білім беру жүйелерінен айырмашылығы, бұл модель оқушыларға мәселенің пайда болу себептерін және деректерді визуализациялау және қарапайым модельдеу, ыңғайлы қарым-қатынас және икемді өзара іс-қимыл, бірлескен жұмыс және SL ортасына батыру есебінен оларды шешу әдістерін түсінуге көмектесу үшін арнайы әзірленген. SL ортасында үш модульді біріктіре отырып, модель әртүрлі білім салаларында тиімді бірлескен оқыту үшін кең мүмкіндіктер береді.

Ақпаратты дайындау модулінде оқытушылар мен студенттер SL көрсету виртуалды залында semantic Wiki Template семантикалық үлгісінің қолдауымен ұсынылған барлық әрекеттерді орындау үшін қозғалмалы аватарларды пайдаланады. Бұл үлгі платформаны оқылатын оқу пәні бойынша ақпараттар бөлімдерімен қамтамасыз етеді. Оны пайдалана отырып, оқытушылар студентке практикалық тапсырмаларды оңай бере алады, ал студенттер Ақпараттық технологиялар саласында қандай да бір терең дайындықсыз жауап бере алады және нәтижелерді ұсына алады.

Түйін сөздер: онлайн оқыту, диалогтік оқыту, виртуалды шындық, цифрлық және педагогикалық технологиялар, онлайн-сынып.

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ИНТЕГРАЦИЯ ЦИФРОВЫХ И ПЕДАГОГИЧЕСКИХ ТЕХНОЛОГИЙ В ПРОЦЕССЕ ОБУЧЕНИЯ СТУДЕНТОВ СОЦИАЛЬНО-ЭКОНОМИЧЕСКИХ И ПЕДАГОГИЧЕСКИХ НАПРАВЛЕНИЙ ПОДГОТОВКИ

Аннотация: В данном исследовании рассматривается определение возможности интегрировать преимущества ролевой игры, совместного и диалогового обучения, а также реалистичных кейсов в процессе обучения студентов социально-экономических и педагогических направлений подготовки.

В статье описан опыт внедрения образовательной модели интеграции цифровых и педагогических технологий на базе онлайн-платформы виртуальной реальности Second Life (SL), которая обеспечивает для студентов социально-экономических и педагогических направлений подготовки возможность участия в ролевых играх, интерактивного обучения и социального взаимодействия в процессе

обучения. Предлагаемая модель состоит из трех модулей: модуль подготовки информации; совместное моделирование; рефлексивный модуль, обеспечивающий получение практических навыков путем участия в 3D-игре. Студенты и преподаватели, участвовавшие в апробации модели дали в целом положительную оценку.

Основная цель разработки образовательной модели на основе Second Life состоит в совершенствовании учебного процесса, используя преимущества ролевой игры, совместного и диалогового обучения, а также реалистичных кейсов в виртуальной среде. Этого можно достичь с помощью трех модулей: модуля подготовки информации, модуля совместного моделирования для изучения ситуации и рефлексивного модуля.

В отличие от некоторых виртуальных образовательных систем, данная модель специально разработана, чтобы помочь студентам социально-экономических и психолого-педагогических направлений подготовки, понять причины возникновения проблем и методы их решения за счет визуализации данных и простого моделирования, удобного общения и гибкого взаимодействия, совместной работы и погружения в среду SL. Интегрируя три модуля в среде SL, модель предоставляет более широкие возможности для эффективного совместного обучения в различных областях знаний.

В модуле подготовки информации преподаватели и студенты используют движущиеся аватары для выполнения всех действий, представленных в демонстрационном виртуальном зале в SL при поддержке семантического шаблона Semantic Wiki Template. Данный шаблон обеспечивает платформу разделами информации по изучаемой учебной дисциплине социально-экономических и педагогических направлений подготовки.

Ключевые слова: онлайн обучение, диалоговое обучение, виртуальная реальность, цифровые и педагогические технологии, онлайн-класс.

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