Plastinina N.A., Bogdanova S.Yu., Dimova I.V.

EDUTECH IN CONTINUING EDUCATION

Пластинина Н.А., Богданова С.Ю., Димова И.В.

ОБРАЗОВАТЕЛЬНЫЕ ТЕХНОЛОГИИ В НЕПРЕРЫВНОМ ОБРАЗОВАНИИ

Abstract. With the increase in implanting the information and computing technologies (ICT) into learning and continuing education during the last two decades and shifting to distant educational technologies (DET), it has become obvious that there is a vital need for school and university teachers to upgrade and develop their e-learning and e-teaching skills consistently. Since integrating technology into classroom, online or offline, has already become both a global tendency and a crucial change in the quality, form and methodology of education, there appeared an urgent importance for appropriate digital continuing education for school and university teachers to boost their readiness, preparedness and ability to adapt to the changing conditions of the educational environment. This is a niche opportunity for the local Universities to fill in. The study examines the plethora of conditions, assumptions and risks affecting the quality of educational content for an effective online continuing education course. The article details the stages and principles of designing an e-learning online course for continuing education. Using information visualization and feedback tools as examples the authors propose practical recommendations for content development and risk management. The authors imply that to create a quality online continuing education course, the developing team should take into consideration the characteristic differences of online education as compared to traditional methods. Active learning, time management, progress monitoring and communication are also brought to focus. The proposed framework, educational content development and additional strategies suggested have implications to teachers and educators involved in e-courses development, as well as to a wide range of users.

Аннотация. Повсеместное внедрение в образовательный процесс информационно-коммуникационных технологий (ИКТ) в течение последних двух десятилетий и глобальный переход к использованию технологий дистанционного обучения (ДОТ) привели к пониманию, что педагоги школ и университетов остро нуждаются в непрерывном повышении квалификации в области ИКТ и электронного обучения для повышения их готовности, и способности адаптироваться к изменяющимся условиям образовательной среды. Непрерывное профессиональное образование и последовательное повышение квалификации становится одними из самых значимых процессов, качественно влияющих на содержание, формы и методы обучения. Авторы полагают, что университеты могли бы заполнить эту нишу на рынке образовательных услуг и обеспечить непрерывное повышение цифровых компетенций преподавателей школ и ВУЗов. В исследовании рассматривается множество условий, предположений и рисков, влияющих на качество образовательного контента для эффективного онлайн-курса непрерывного профессионального образования. В статье подробно описаны этапы и принципы проектирования электронного учебного онлайн-курса повышения квалификации. На примере инструментов визуализации информации и обратной связи авторы предлагают практические рекомендации по разработке контента и управлению рисками. Авторы подразумевают, что для создания качественного онлайн-курса для непрерывного профессионального образования команда разработчиков должна учитывать характерные отличия онлайн-образования от традиционных методов, принципы активного обучения, тайм-менеджмент, мониторинг прогресса обучающихся и средства обратной связи. Предлагаемая структура и дополнительные стратегии создания образовательного контента онлайн-курса могут представлять интерес для преподавателей и методистов, занимающихся разработкой электронных курсов, а также широкого круга пользователей.

About the authors: Plastinina Nina Anatolievna, ORCID 0000-0002-7658-890X, Ph.D., Nizhnevartovsk State University, Nizhnevartovsk, Russia, nina.plastinina2011@yandex.ru; Bogdanova Svetlana Yurievna, ORCID 0000-0002-4804-4788, Dr. habil., Irkutsk State University, Irkutsk, Russia, rusjap@mail.ru; Dimova Irina Vadimovana, Izluchinsk Municipal Secondary School 2 Izluchinsk, Russia, irina_140199@mail.ru

Сведения об авторах: Пластинина Нина Анатольевна, ORCID 0000-0002-7658-890X, канд. филол. наук, Нижневартовский государственный университет, г. Нижневартовск, Россия, nina.plastinina2011@yandex.ru; Богданова Светлана Юрьевна, ORCID 0000-0002-4804-4788, д-р филол. наук, Иркутский государственный университет, г. Иркутск, Россия, rusjap@mail.ru; Димова Ирина Вадимовна, Излучинская ОСШ УИОП №2, г. Излучинск, Россия, irina_140199@mail.ru

Throughout the last two decades leaders both in the field of education and technology repeatedly urged educational institutions to actively involve and engage teachers and, by doing so, their students into the very process of active e-learning [2; 11; 20; 21]. Schools are increasingly deploying computers, laptops, netbooks, tablet computers or smartphones (as well as handheld portal media and gaming devices) to support teaching and learning both inside and outside classrooms. Active learning in general and e-learning as its tool have become the fashion and the cry. Despite the urgency of these calls, the extensive recent studies have shown that the problem is not in the technology itself or the resilience to interactive e-learning methods but the quality of edutech teachers' skills that should be addressed to [3; 4; 23]. A teacher training experience in the university and what is more, accessible and available continuing education in later stages of their career is more important to become focal [11; 12; 14].

This paper attempts to shed light on the competencies a school or university teacher must have and consistently develop in order to teach in the virtual learning classroom, the framework for the design of training proposals aiming to develop teachers' competencies for virtual environments in secondary and higher education is also given attention.

The purpose of this article is to present a generalized theoretical and practical experience of introducing ICT into continuing education for teachers over the past 5-10 years – from studying the perceptions of teachers about their readiness to teach online to creating the possible framework and practical recommendations for developing content for distance continuing education. The results and recommendations may be of interest to all participants in the educational process in the distance-learning format.

The study is based on the analysis of the accumulated general theoretical material of foreign and domestic research in this area [2-4; 12; 14; 15; 20; 21]. The criteria for the study are the assessment of the quality of the electronic course (Indiana and Purdue Universities (USA)) and the sum of competencies in the field of using ICT in education (Federal Education Standard of the Ministry of Education and Science – http://fgosvo.ru/fgosvo/151/150/24) [15; 17].

The data analysis procedure included the study of descriptive statistics on the introduction of ICT in distance and continuing education in Russia, Europe and the USA [2-4; 7; 11]. The main objective of our analysis was to identify the combatable difficulties and develop proposable framework and practical recommendations for developing content for distance continuing education.

Problem analysis: what are looking at? The recent technological breakthrough and the pandemic of COVID-19 with its massive global shift to distance learning brought to focus the need to appropriate digital training for school and university teachers in the later stages of their career in particular to boost their readiness, preparedness and ability to adapt to the changing conditions of the educational environment [1; 9; 20].

Nearly every study describing the continuing education courses, their framework and completion rates suggests that teachers in the later stages of their career experience a plethora of challenges related to the online format including technical difficulties, a sense of isolation, a relative lack of structure, and a general lack of support [9; 10; 18-20]. These challenges may contribute to their poor online performance. The situation may also be aggravated by the fact that many teachers live and work in hard-to-reach and remote areas which means that online continuing education courses is the only option to develop their professional skills and provide consistent peer and expert support, opinion exchange and socialization. It is where the local universities may and should step in [5; 16].

The following research suggests studying assumptions and risk factors for a continuing education course. The results show that a successful high-quality electronic course should basically follow the development stages listed below:

1. Analytical phase

Stakeholder analysis (situation analysis)

Table. Summarizes the participating parties, their roles and responsibilities, goals and gains.

Table

Stakeholder analysis

Participating parties	Roles	Responsibilities	Goals and gains
University	Course provider Course supervisor	Course management, facilities, educational resources, etc.	Ensuring high quality professional development for school teachers. Collaboration with Local Ministries, meeting their demands
University teachers and IT engineers	Course teachers, tutors	Educators in a group and 1:1 online continuing education	Ensuring high quality professional development for school teachers

Participating parties	Roles	Responsibilities	Goals and gains
		course, providing the course curriculum and learning materials	
School teachers	Students	Course progress and completion	Professional development and satisfaction, increasing competitiveness in the education market

It is clearly observed from Table 1 that the main agents with their roles fulfilled respectively invest in and contribute to the goals and gains of such e-learning online course for teachers.

The Universities provide and ensure high-quality professional support for local and regional educators, gain reputation and collaborate with local Ministries and Government, expand their education market. Economically, such courses are of mutual benefit for both Universities and local education authorities: the Universities get an opportunity to introduce and develop their educational services, school leaders and local education authorities save on long distance trip costs, transportation and overhead costs when sending teachers to advanced training courses. They patch up insufficient funding for such programs and get high quality educational services provided by the universities. School teachers develop and upgrade their professional skills, increase their competitiveness in the education market, derive professional satisfaction, enrich their educational experiences and socialization, all this hopefully resulting in better jobs and fees.

2. Planning

Course planning includes:

1) For the University – defining the logic of participation of the parties: drafting and implementing educational policies and strategies, course curriculum, regulatory framework, decision-making, distributing the roles and responsibilities, pinpointing the incentives for teachers-trainers and tutors to create distance learning courses (including increase income through fees, free access to the Internet, allocation of funds for training specialists), advertising courses and attracting students, implementation results analysis.

2) For the University teachers: course architecture development, providing teaching materials, training and self-training in distance learning technologies, conducting classes using distance learning technologies, results analysis and finalization.

3) For technical IT staff: LMS and DL access and maintenance (providing access to the University LMS or any educational platform, maintaining its operability, etc.).

3. Implementation

Assumptions and risks may include insufficient funding, market competition, lack of motivation among potential parties, lack of awareness among potential course participants and (or) distrust of the new form of education, technical complexities (software, resources, time- and effort consumption, client support, etc.).

Since the financial and marketing factors (e. g. funding and advertizing) are beyond the authors' powers and horizon and are in the University administration domain, we have addressed the topics that involve course content, educational resources, educational activities, tasks and activities within the proposable course.

What are the barriers and how to combat them? To address adequately why most e-learning courses for continuing education have not embraced respectively adequate support and success, it is necessary to identify and understand common barrier risks: discomfort and anxiety at using newer edutech trends and tools, a possible increase in the amount of preparation time, the risks that students will demonstrate limited presence, motivation and output [6; 8; 13; 22].

Let us address some of these barrier risks.

Each teacher training course contains lectures. What is wrong with a traditional 40-50 min lecture and why do they not work in online courses? It is too long for an e-learning lecture, the listeners or viewers get distracted easily or may fail to concentrate or find a time slot appropriately long enough to listen or to view in real time virtual class. What is the solution?

There are a few actually:

1) The students should listen, view, discuss and be engaged into solving problems. So, the whole 40-50 minutes should be split into shorter episodes.

2) There must be pauses at least three times for two minutes each to get feedback, check comprehension and following the topic by doing a short task or a five-minute discussion, live quiz, etc.

3) In case a student failed to participate online in real time lecture, all the materials complemented by instructional techniques should be available at the University LMS Teacher or tutor Google class (https://classroom.google.com) Webinar (https:webinar.ru), etc.

Let us review some examples from the author's course hosted at LMS NVSU.

1. Video lecture

Figure 1 illustrates a 9 minute 11 second episode from Lecture 2 on the e-learning tools and resources for ESOL classes. In this part of the lecture the lecturer speaks about how the Internet resources (social media, e-journals, sci-pop websites) and tools (Mentimeter: https://www.mentimeter.com, iClicker: https://www.iclicker.com) can be used in classroom specifying the activities best to use. The lecture was video conferenced by the author via Zoom meetings (Zoom.com) during an online continuing education seminar on the digital tools and resources for ESOL and TESOL teaching in September 2022. Zoom meetings allows to deliver a lecture and record it simultaneously. The recording is stored in Zoom cloud or University LMS (http://do.nvsu.ru). To monitor comprehension in an online class, a teacher can divide students in pairs or small groups and assign them to Zoom rooms where they have to interact with one another to solve the problem, the teacher being able to visit every room and monitor the student progress. Other options for collecting immediate feedback or comprehension activities are described further.
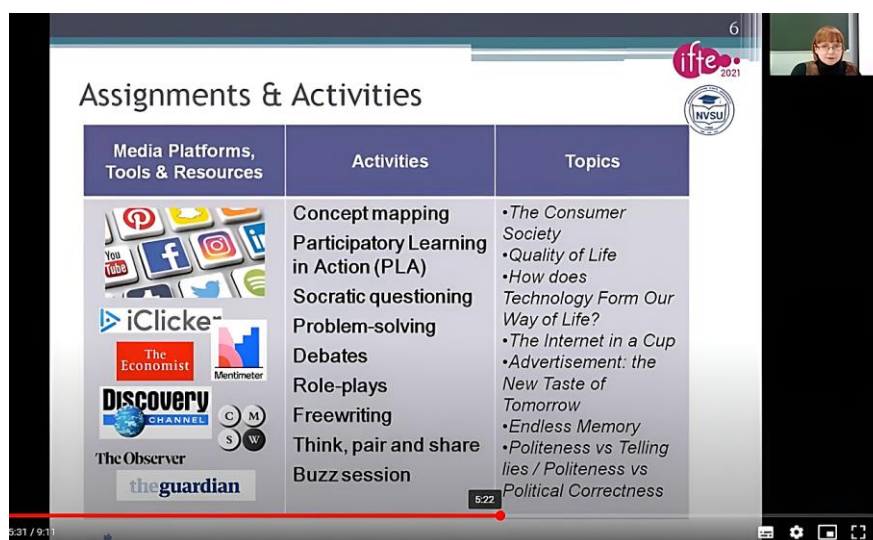
Fig. 1. Sample lecture episode

2. Tools

Perhaps, the single greatest barrier of all, however banal it may seem at this stage of ICT revolution is the fear of "using and losing" to newer apps and tools, the fear to employ new tools or transferring a traditional method to a new smart level. Appropriate instructional techniques relieve the potential user of the fears and encourage them to incorporate these tools into their classrooms.

The examples below illustrate the instructional techniques for Mentimeter, an online immediate feedback tool, which is helpful for both monitoring the student comprehension and online presence.

Figure 2 shows an LMS page with a full instructional series for Mentimeter.
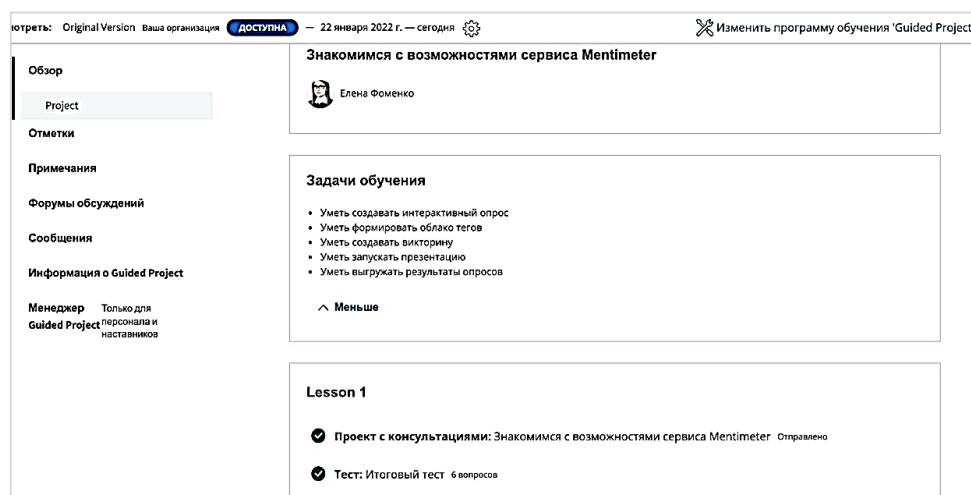
Fig. 2. Employing Mentimeter in classroom: instructional techniques[1]

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[1] The Instructional technique, devised by E.A. Fomenko, Nizhnevartovsk State University for Digital Educational Practices Course

Figure 3 shows a sample questionnaire slide for an immediate student feedback on the finalizing course activity. This is a multiple choice question to gather students' answers. The other options include word cloud, open ended and scales questions, ranking, Q&A and more. The questionnaires are anonymous which ensures more candid feedback. The modification of traditional lecture in such a manner is one way to incorporate active edutech and e-learning in the continuing education course. The other simple but effective ways are to use some well-rooted and popular tools such as Google+ (Google doc, Google classroom) (fig. 4), Quizzez.com can also be used in the same way in the virtual classroom to monitor completion through creative writing or playing the live quiz or may be assigned as home assignments online.

Fig. 3. Employing Mentimeter in classroom: questionnaire example

Fig. 4. Sample activities to incorporate into lectures:
live test and a shared Google.doc for creative writing

Use of the above mentioned techniques in an online course is vital as they seem to combat major risk barriers: they help to not only introduce them into the teacher's classroom later, but basically, allow teacher-students master these instruments themselves, see and put them at work and model their potential activities in future.

Conclusion. Research has suggested, however, that to achieve the incentives stated all participating parties must create a supportive intellectual and emotional learning environment that encourages students of a continuing education course (i.e. teachers themselves) to take risks.

The designed strategies have been used in some continuing education courses and shown favorable attitudes on both the teachers' and students' sides. Visual based instruction, elaborate instructional techniques and using immediate feedback tools provide a helpful starting ground for other interactive techniques such as collaborative writing, interactive quizzes, short problem-solving sessions, etc.

In short, the described alternatives add to and substantially improve such traditional edutech as lecture and provide a rich menu of different approaches and the teachers' instructional skills.

The proposable framework has no claim of being comprehensive as it has been only the initial step and demands further research.

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