DIGITAL LEARNING RESOURCES IN TEACHING

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Abstract

This article presents research findings of the vocational teachers' experience in reimagining the role of innovative technologies based on the professional development course '*Digital Education for Teachers*' which was held in vocational education institutions of Tyumen Region. The main challenge of the course was to help the teachers develop and integrate their digital competence in vocational education, allowing them to create electronic educational resources for action oriented activities and work-based learning by combining digital educational materials and learning opportunities for online interaction with conventional methods. The teachers were introduced to the use of blended learning models, which enable them to create learning content and impart it choosing appropriate media for a specific learning program. Over the course of eight months the teachers created 490 electronic educational resources for specific learning programs and incorporated them into the curriculum content. A total number of 140 teachers have produced digital learning materials for 93 disciplines and tested them in the educational environment whereby enlarging the curriculum scope. Digital education for teachers expands the role of educators and largely contributes to a gradual transition from traditional forms of interaction with students to electronic educational resources (EER) designed for tailoring instruction to individuals' needs and skills for students to become self-directed learners.

1. Introduction

Continuous modernization of the education system allows us to identify those trends that change the approach to pedagogy and education, with *digitalization* coming to the fore. Digitalization not merely makes the education process more flexible, or more adjusted to the realities of the modern day, but also leads to the influx of competitive professionals in the changing *digital world.*

The digitalization of professional education is caused by the need to evolve the vocational education and training to reach the milestones of the modern world. *Digital economy* and *digital education* are defined as Russia's top priority reflected in the federal acts. From a policy standpoint, the factors that give rise to the need to build a digital educational process for vocational education and training are the three trends that characterize the formation of a digital society:

- digital economy and new requirements for the employees;
- new digital information technologies that shape and promote the digital environment;
- digital generation, i.e., a new generation of learners with specific sociopsychological traits.

The digitalization of vocational education results in rethinking the status of the teacher who assumes a leadership role and acts as a leader capable of teaching, guiding, instructing and educating students using modern electronic educational technologies, digital learning content and other resources. A leader's position in promoting effective educational resources is stipulated by:

- a teacher's willingness to learn how to increase educator-specific digital competences;
- a students' trust, i.e., the teacher acts as a digital expert in the teaching–learning process;
- the successful incorporation of electronic content is guaranteed by a certain mindset when the teacher effectively adapts the newly acquired technologies to the students' needs.

Building trust between the teacher and the students is difficult, but it starts with virtual empathy. Emotional dimension in digital literacy has gained scholarly attention. Previous research on digital competence (Ala-Mutka, 2011; Area & Pessoa, 2012; Eshet-Alkalai, 2004) has shown that emotional skills are needed for the development of digital literacy in the 21st century. According to Ala-Mutka (2010), emotional dimension is emerging as a significant area of digital competence, – emotional skills are critical for promoting intercultural communication and collaboration in informal learning on social networks. Eshet-Alkalai (2004) also emphasizes the importance of socio-emotional dimension of digital literacy, which encompasses cognitive and metacognitive aspects together with the affective ones. García-Pérez et al. (2016) argue that empathy has not been studied within the educational context created by new virtual surroundings. Røkenes and Krumsvik (2014) highlight that digital competence requires both cognitive and emotional skills to function effectively in the digital environment. The leading role of critical thinking skills underlying digital competency is acknowledged by Instefjord and Munthe (2017) who describe the critical and reflective aspects of building new knowledge.

2. Problem Statement

The critical requirements for the Russian Federal State Educational Standard for the vocational education curricula serve to stimulate teachers to search for electronic educational resources that meet didactic objectives concurrently updating the learning content. Therefore, teachers are to be trained to sort out the educational resources available online as well as to see the possibilities of their use in training sessions. Digital training for vocational education teachers encourages them to create electronic educational resources appropriate for the changing educational environment.

The main challenge of vocational education is to teach problem-solving skills and practical competence. Most professional competencies are formed through practical work or work-based experiences such as internships, job shadows and apprenticeships. Therefore, combining theoretical and practical knowledge is a paramount task (Volkodav, 2015). Theoretical training is carried out through educational and methodological support for the students to study academic disciplines at their own pace using digital technologies.

Teacher professional development is regarded as an important approach for the improvement of quality of teaching (Thurlings & Perry den Brok, 2017). The professional development course is designed to prepare and support teachers as e-teachers, rather than teachers who sporadically resort to Internet resources and digital devices for instruction. The professional development courses tend to focus on new paradigms of technological integration, collaboration, teaching and learning (Rice & Deschaine, 2020).

Electronic educational resource is a set of teaching tools that includes structure, subject content and metadata about them. Electronic educational resource represents a kind of digital shell, filled with the content created by the teacher (Semenovskikh, 2014). Electronic educational resources can be classified according to the four criteria: (1) mission; (2) character; (3) technology; (4) functions (Ibragimova & Skobeleva, 2017; Kucher, 2017; Zakieva, 2018). Modern educational system relies on orthodox face-to-face instruction and digital learning, which is based on electronic resources and didactic methodology. This combination of various technologies is subsequently synthesized into blended learning (Vasiliev et al., 2014).

Blended learning is not only redesigning the current education landscape, redefining the standards for teaching and learning, it is placing 'a strong emphasis on work-based learning' (Semenovskikh, 2015). The application of blended learning (Shlyapina, 2016) in academic context is meant to help vocational education teachers: (a) to enhance the educational opportunities for students by offering more flexible and permeable learning pathways; (b) to tailor learning to each student's needs by providing different potential pathways to learning while monitoring the pace at which students move forward through the learning materials; (c) to encourage and stimulate students to be independent self-directed learners through the use of electronic resources; (d) to move away from knowledge transfer to interactive knowledge sharing, for instance, by creating joint online presentations with Prezi; (e) to assume the role of a mentor and a digital expert; (f) to build a new information environment and a highly-effective learning environment; (g) to reduce accessibility barriers and enhance the quality of education.

3. Research Questions

In the modern society, such trends as *digitalization* and *gadgetization* are influencing almost all the spheres of life, including education where new technologies are reshaping the educational process by enhancing the teacher's role in the classroom. Firstly, when it comes to digital technologies, the pedagogical community shows a certain degree of conservatism. Secondly, educators, including interns and teacher trainees, lack those competencies that involve the skills to effectively operate modern technologies in order to solve pedagogical problems. Targeted digital learning for teachers empowers educators to develop and effectively imbed the electronic educational resources needed in today's changing education paradigm, which requires teacher educators to constantly review professional learning opportunities, responding to rapidly changing educational environments affected by emerging digital technologies (Falloon, 2020).

3.1. Are educators ready to take the responsibility for ensuring the quality of the new media education?

3.2. What prevents them from taking a leadership position in promoting effective pedagogical technologies?

3.3. Can teachers be trained to review and modernize their learning content and reconsider how best to engage and inspire their learners?

4. Purpose of the Study

We aimed at establishing a pattern between an increasingly active integration of electronic resources into education underlying the teachers' digital competencies and the students' redistribution of classroom hours enabling them to study the theory of the subject while enhancing their practical skills. The professional development course 'Digital Education for Teachers' was launched to focus on improving the teachers' digital competencies by means of personalized learning and educational modules.

5. Research Methods

In the current study, the research method of *content analysis* was applied to analyze and measure the teachers' work on Moodle. The units of analysis included 490 electronic educational resources for various learning programs created by the vocational education teachers. Along with *formal analysis*, which is characterized by a lesser degree of subjectivity, content analysis encompassed *quantitative analysis* to obtain higher accuracy when comparing the first order statistic. Additionally, to achieve the mission of the research, the teachers were exposed to blended learning models.

6. Findings

Teachers are gradually becoming involved in designing and scaling up electronic resources in teaching practice. Electronic educational resources encourage teachers to constantly revise the dimensions of teaching by empowering the students to self-manage. Therefore, it has become increasingly important for vocational education teachers to increase their digital competence. Vocational teachers are strengthening the necessary skills to select electronic educational resources in accordance with the educational objectives, to tailor learning to each student's needs, and to measure their effectiveness, for example, in assessing student performance.

The professional development course '*Digital Education for Teachers*' was held from November 2018 to June 2019 in vocational education institutions of Tyumen Region. The course modules were aimed at instructing the teachers on how to incorporate evidence-based practices into real-world settings through designing and testing the electronic educational resources. The main idea behind the course was to develop and integrate teachers' digital competence in vocational education, allowing the teachers to create electronic educational resources for *action oriented activities*, *work-based learning* and *blended learning models* by combining digital content and opportunities for virtual interaction with conventional place-based classroom methods. The course program was designed to support the teachers in their efforts to structurize their programs with an emphasis on digital learning.

During the implementation phase of the professional development course, there was a solid emphasis on instructing vocational education teachers on how to develop learning content using shareware software, free programs, open-source platforms, etc. E-learning content à la carte is changing the face of traditional education, by offering individual productions of digital learning resources for transmitting knowledge and skills, thereby increasing student mobility and academic achievement. The teachers were introduced to the use of blended learning models, which enable them to create learning content and impart it choosing appropriate media for a specific learning program.

The framework guiding teacher digital capability development builds on the following elements (shown in Figure 01):

- An introduction to blended learning;
- Presentation services;
- Assessment services;
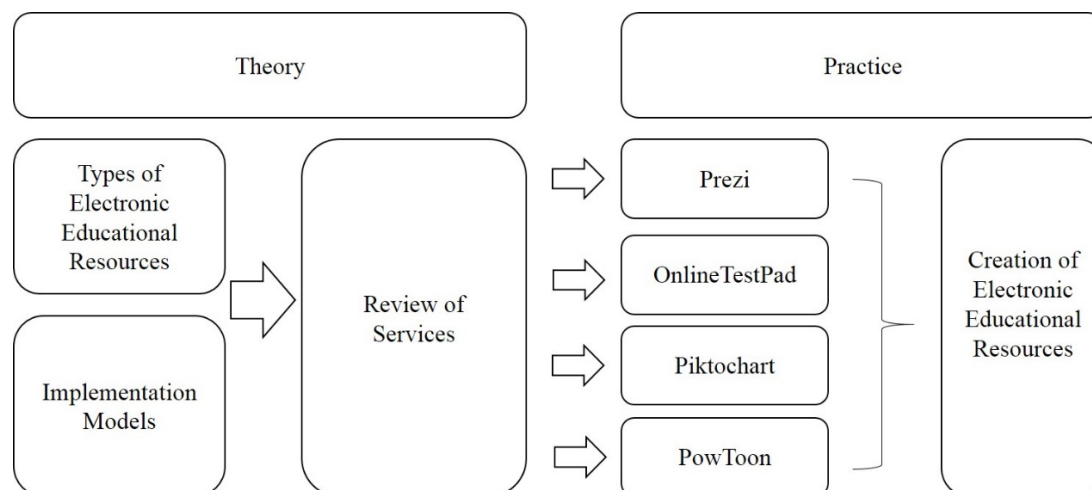- Infographic makers;
- Animation services.

Figure 1. The structure of the training courses

The professional development course '*Digital Education for Teachers*' encouraged the teachers to consider an expanded view of teacher digital competence in vocational education. Over the course of eight months the teachers created 490 electronic educational resources for specific learning programs including 123 interactive presentations with Prezi, 135 assessment tools with Online Test Pad, 122 Piktochart infographics and 110 animated videos on Powtoon.com. Thus, they encompassed all the aspects inherent in the '*Digital Education for Teachers*' course program. A total number of 140 teachers have produced digital learning materials for 93 disciplines and tested them in the educational environment whereby enlarging the curriculum scope.

7. Conclusion

Digital education for teachers expands the role of educators and largely contributes to a gradual transition from traditional forms of interaction with students to the active use of EER in teaching practice. Educational diversity and blended learning improve student engagement and agency, while electronic educational resources, web-based e-testing knowledge systems and remote access to networks expand cooperation and collaboration among students in vocational education.

The use of electronic educational resources is re-engineering vocational education, wherein the share of practical activities in educational experiences is increasing. The electronic educational resources created by teachers meet the urgent needs of students engaged in an independent study of the theoretical material of the course. This in turn affects student motivation in the classroom and systematizes subject knowledge when a student is mastering the core competencies and problem-solving skills. In addition, electronic educational resources are designed as a tool for students to use to develop digital competencies, the vital 21st-century skills for students.

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