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Teaching experiences of digital education during the pandemic – multicentre study

Doświadczenia dydaktyczne edukacji cyfrowej w czasie pandemii – badanie wieloośrodkowe

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STRESZCZENIE

DOŚWIADCZENIA DYDAKTYCZNE EDUKACJI CYFROWEJ W CZASIE PANDEMII – BADANIE WIELOOŚRODKOWE

Cel pracy. Pandemia Covid-19 zmusiła wielu nauczycieli do przejścia w krótkim czasie z tradycyjnego nauczania twarzą w twarz na korzystanie z różnych platform cyfrowych. Celem badania było poznanie doświadczeń nauczycieli w sferze edukacji cyfrowej na wydziałach pielęgniarstwa w czterech krajach (Chorwacja, Serbia, Słowenia, Szwecja), którzy uczestniczyli w projekcie Erasmus+ Digital Education in Nursing.

Materiał i metody. Wykorzystano badania jakościowe z częściowo ustrukturyzowanymi wywiadami grupowymi. Wzięło w nich udział 28 nauczycieli pielęgniarstwa. Wywiady zostały spisane dosłownie i poddane analizie metodą indukcyjną z wykorzystaniem jakościowej analizy treści. Wywiady poddano analizie zgodnie z celem badania, poszukując kodów, które pogrupowano w podkategorie, a następnie w kategorie bazując na podobieństwach treści.

Wyniki. Analiza wywiadów pokazała trzy ważne tematy: „sprzeczne odczucia nauczycieli w przypadku przejścia na nauczanie cyfrowe", „brak kompetencji cyfrowych", „wyzwania nauczania cyfrowego w przyszłości".

Wnioski. Szybko rozwijająca się technologia cyfrowa zapewnia nowe możliwości i wsparcie w nauczaniu oraz zdobywaniu wiedzy. Badanie wykazało potrzebę dalszego rozwoju kompetencji cyfrowych nauczycieli, którzy zalecają hybrydową metodę nauczania w przypadku kształcenia pielęgniarek, z uwagi na brak możliwości nabycia niektórych umiejętności przez uczniów wyłącznie w sposób cyfrowy.

Słowa kluczowe: kompetencje cyfrowe, edukacja, pielęgniarstwo, nauczyciele

ABSTRACT

TEACHING EXPERIENCES OF DIGITAL EDUCATION DURING THE PANDEMIC – MULTICENTRE STUDY

Aim. The COVID-19 pandemic forced many teachers to switch from traditional face-to-face teaching to the use of various digital platforms in a short period of time. The research aimed to find out about teachers' experiences of digital education at nursing faculties in four countries (Croatia, Serbia, Slovenia, Sweden) which participated in the Erasmus+ Digital Education in Nursing project.

Material and methods. Qualitative research with semi-structured group interviews was used. A total of 28 nursing teachers participated. The interviews were transcribed verbatim and analysed inductively, using qualitative content analysis. The interviews were analysed in accordance with the study aim by searching for codes which were grouped into subcategories and then into categories based on the similarity of the content.

Results. Three important themes emerged from the analysis of the interviews: "conflicting feelings of teachers when switching to digital teaching", "lack of digital competences", "challenges for digital teaching in the future".

Conclusions. Rapidly developing digital technology provides new possibilities and support for both teaching and learning. The research identified the need for further development of the digital competences of teachers, who recommended that a hybrid teaching method is the best for the education of nurses, since certain skills cannot be acquired by students solely in a digital way.

Key words: digital competences, education, nursing, teachers

INTRODUCTION

In recent years an explosion in the quantity of different information and communication technologies used in healthcare systems and education for healthcare professionals has occurred. This development has been accelerated by the measures taken due to the COVID-19 pandemic. Many digital technologies and platforms for the implementation of learning processes in the form of contact hours with students and independent work by the student existed before the COVID-19 pandemic. However, during the pandemic their use became more prevalent [1].

Hämäläinen et al. [2] found that objective and subjective digital competencies differ among teaching professionals. Teachers generally recognise the importance of digital technologies in teaching regardless of their background. However, older professionals often showed weak skills, but recognised their need for professional development and the necessity of using digital technologies.

The level of digital competence and digital teaching methods as well as technologies are different in different countries. In Croatia, the basic criteria for teaching and learning at a distance were defined in 2013, and even today there are numerous problems associated with the struggle between traditional education and educational innovation [3]. In some universities, the implementation of e-learning is progressing very well, in others it is at the beginning, and in three it has stopped [4].

The Slovenian health-care system, for example, acquired numerous digital solutions, including project eHealth, which enables high-quality, accessible and low-cost care for patients [5]. However, healthcare professionals and their educators report insufficient digital competencies, the need for additional support and training, and a perception of the use of digital tools as being an additional workload [5]. The strain is also greater due to the uniqueness of healthcare and nursing education, which involves a considerable amount of hands-on experience and practical experience. Compared to other educational settings, the education of health professionals is traditionally conducted face-to-face in educational or clinical settings as skill development is an important part of the education of students in health professions [6].

In Serbia, the digital transformation of education takes place under the influence of the European frameworks (DigComp, DigCompEdu, DigCompOrg), which provide a common conceptual basis in Europe, but it is not applied consistently. The concept of digital education is mentioned in the Proposal for the Strategy for the Development of Education and Education in the Republic of Serbia until 2030. It includes measurements focused on the digital competences of teachers and students, as well as the pedagogical application of digital technologies. The teacher's digital competence framework was adopted in 2017 and revised in 2019 [7].

In Sweden the digitalisation of schools began in the 1980s. This was the decade when the presence of personal computers became increasingly common and as a result, more and more teachers received training in computer skills to increase their competence [8]. In October 2017, the government adopted a national strategy for digitalising the school system. One purpose of the strategy is to ensure that work is being carried out strategically, systematically and cost-effectively within the entire school system and accordingly to all important principles. The strategy extends up to and including the year 2022. The pandemic caused the process to develop faster than expected because all Sweden's universities had to switch to digital teaching.

This is why the field of healthcare and nursing education is very specific in terms of digital teaching methods and technologies, the biggest challenge being practical clinical training. The latter is, in digital form, most often based on case studies from practice in various professional areas of nursing [9]. The COVID-19 pandemic forced a rapid transition from the traditional face to face education/examination to digital education, which created a major challenge for students as well as teachers. For example, Langegård et al. [10] described nursing students' experiences of pedagogical transition from traditional campus-based learning to distance learning using digital tools as a challenge requiring a different plan. They highlighted the importance of adapted learning activities, clear instructions, and a visible course structure when using digital tools [10]. The pandemic situation meant that education continued digitally but without the necessary planning, so we think that analysing the situation through conversations with teachers, who have these experiences in different contexts, may provide the knowledge that will help us to understand the consequences and possibilities of digitalisation with a focus on nursing studies.

AIM

This study was intended to describe the teachers' experiences of the digital teaching method at nursing faculties in four countries that participated in the Erasmus+ Digital education in the nursing (DEN 2020-1-SE01-KA226-HE-092537) project and was coordinated by Malmö University, Sweden. The following participated in the project: University of Applied Sciences, Zagreb, Croatia; Faculty of Health Sciences in Celje, Slovenia; Universities in Novi Sad, Serbia; Republic of Macedonia Goce Delčev state university Štip, Republic of North Macedonia; and Malmö University, Malmö, Sweden.

MATERIALS AND METHODS

A qualitative research method was used since it allows researchers to accurately describe the research problem and identify individuals' experience and interpretation of a particular situation [11]. Data were collected using qualitative designed group interviews with teachers from partner universities. We used an inductive approach and the content analysis method. The questions asked during the interviews were: (1) Tell us about your experiences during the transition from face-to-face teaching to digital teaching. (2) What was your experience with the digital way of teaching? (3) Which challenges for digital teaching can you see in the future?

The group interviews were held face-to face. Because of pandemic measures that differed in partner organisations during the interview period, it was decided that group interviews would be held in four of the five participating institutions.

Participants were selected in groups using purposive sampling in relation to their knowledge of a topic as recommended by Doody et al. [12]. We included 28 teachers in the study. Most of the participants were women (82%), aged M=45.46 years on average and having an average of 14.66 years of teaching experience (Tab. 1).

Tab. 1. Demographic characteristics of participants

Country	Number of participants	Gender		Median age	Median years of practice in education
		Male	Female		
Croatia	7	1	6	49.00	28.00
Serbia	7	2	5	44.43	9.14
Slovenia	6	1	5	50.66	13.00
Sweden	8	1	7	37.71	8.50
Together	28	5	23	45.46	14.66

Information about the study, the question of participation and the planned time for the interview had been sent via the common email address at each institution. Teachers, who were willing to participate, contacted the responsible person for the study via email or telephone. Interviews took place in April 2022.

The moderator welcomed participants, provided an overview of the topic and explained the purpose of the interview. The assistant moderator's role was to observe the interaction between participants in the group and make notes as recommended by Krueger and Casey [13]. All interviews were conducted in the native language. The group interview started with specifically chosen introductory questions to motivate everyone to talk; afterwards, more topic specific questions were posed first to introduce the topic in focus and later to encourage conversation among the participants. To move the conversation closer to the key questions, transition questions were posed as recommended by Doody et al. [12]. Before the end of the interviews, some additional questions were asked to clarify various ambiguities. The group interviews lasted 1–1.5 hours and were held in a quiet room at the participants' workplace and digitally recorded.

The group interviews were analysed inductively, using qualitative content analysis [14]. The recorded group interviews were listened to, and the transcripts were read and re-read to obtain an overall impression and gain familiarity with the text. The four interviews were first analysed separately, in accordance with the study aim, by creating codes, which were then grouped according to meaning in subcategories and then in categories. Next, the subcategories were compared for similarities and differences and grouped into 3 categories according to the research questions.

Ethical considerations

The management of each institution gave permission for the teachers to participate in the study. All participants were informed of the purpose and goals of the research before the start of the interview and gave their informed written consent to participate in the group. With this, they allowed the use of the findings of the interviews and the citation of quotes from the interviews. In order to ensure confidentiality between participants as well as the confidentiality of the participants' statements, we anonymised the names, only taking into account the country to which we assigned the number.

RESULTS

By analysing the text of the group interviews and taking into account the research questions, we identified three important themes that are typical for all participating countries: conflicting feelings of teachers in the transition to digital teaching, lack of digital competences, and challenges for digital teaching in the future.

In the following, we present categories (themes) that are typical for all participating institutions from the four countries (1 – Croatia, 2 – Serbia, 3 – Slovenia, 4 – Sweden).

Conflicting feelings in the transition to a digital way of teaching

In this study, we found that teachers had to switch to a digital way of teaching in a very short time when the COVID-19 pandemic appeared. The rapid change to digital education caused conflicting feelings in teachers. The short period of adjustment caused them various feelings such as stress, fear, worry and anger.

The decision was made on Friday, we went online from Monday (1). We had to adapt overnight (1). It frustrated me terribly (3). No one had a choice (4). I asked myself if I needed this (1). It was hard to suddenly switch everything from the face to face to the digital (2), different emotions were involved, but mostly frustration at not reaching the students as we are used to doing (2).

They also missed interpersonal contact; their social life changed.

We didn't see each other every day, we missed each other, we were very happy when we found each other (1). The sense of loneliness in the process was palpable (2).

On the other hand, the teachers felt satisfied that they managed to carry out online teaching during the pandemic, which led to thinking about digital teaching in the future. Digital education has been a topic of general discussion among teachers in academia for a long period. However, no specific measures have been taken as the teachers did not believe that digital training could be adequate for nursing studies.

We learned something new that made us more connected. We did not interrupt the continuity of classes, they took place regularly, we did not have to make up (3). Considering the generations of millennials and generations to come, we have nothing to think about going back to just the classical way of teaching (2). I will never get off this online learning platform (3).

Lack of digital competences

The interviews showed that most of the teachers were not familiar with digital technology and the possibilities inherent in its use, that most of them were encountering online teaching methods for the first time and that they did not have enough knowledge for this. Most of them needed help, which they provided to each other, and at some faculties help was provided from informatics. Despite various forms of help and imparting knowledge, the teachers were aware that it is impossible to develop digital competences in such a short time, as the online method of teaching has its own legitimacy. However, the transition to online teaching also caused them major problems.

I encountered this teaching method for the first time, and it is not enough for me that someone tells me on the phone which key to press, it was science fiction for me (2). We were given some materials from which we had to learn according to an accelerated procedure (3). Regarding teams, we received detailed instructions from our IT specialists, there was also video instruction (1). We tried to help each other (1, 2); the team spirit proved to be quite strong (1). We lacked the pedagogical tools for digital teaching (4).

As the education required for the register nurse is very complex, the teachers noted that, for example, cabinet exercises and clinical practice cannot be carried out remotely, despite some available digital technology. They also had a lot of problems in conducting exams. During the lectures, they faced the problem of establishing interaction with the students, as the students usually did not have the cameras on, and some even thought that when the camera was on, the teacher and colleagues were entering their intimate space, which they did not allow. The teachers, however, did not know who was listening to them and which of the students were present at the lectures and not just plugged in.

Sit in front of the box and witness with yourself, they see us on the screen, but we don't see them (1). Poor interaction with students, like I'm testifying with a laptop (3). You cannot do clinical exercises online (1, 2). Clinical skills, this is something that is practiced in the simulation rooms, but then on a person (1). You can show them the movie and how to do something and I can watch the movie 30 times how the plane is lifted, but I won't know how to lift it (3). Students need a lot of motivation (2). In the lecture hall, you can monitor how the students understand the material, with black squares it is more difficult (2).

Teachers also faced technical problems, such as bad internet connection, bad sound. If they gave lectures from home, they had to adapt the space, some even had to obtain computers and bigger screens.

Many technical challenges that contributed to poor quality (4). Most of us have introduced faster internet at home (1). I arranged the basement myself, but also one room in the house (1). I bought a large TV because the screen on my laptop (1) was really small.

Despite the problems the teachers had, they also identified some advantages of the digital teaching method. Both students and teachers were more satisfied with this method, as they saved time by not commuting to the faculty, and the attendance of students at lectures was also higher.

There are no trips to the school location (1). Saving travel time (2). Students were more satisfied (1). Increased student attendance at lectures (2). It is easier for students to balance their professional and private lives with educational requirements (2).

Challenges for digital teaching in the future

Teachers are aware that the introduction of a digital teaching method into the nursing education programme is necessary, as information and communication technology is increasingly used in practice (e. g. robots that distribute tablets for patients). If the faculties decide on a digital method of teaching, the lecturers are of the opinion that they need additional, supplementary and continuing education to acquire digital competences, that it is necessary to prepare instructions for students regarding their participation in lectures (e. g. cameras included, way of expressing opinions), determine group sizes and limit their working hours. They are also convinced that it is necessary to conceptualise online studies differently, organise webinars and introduce flipped learning, which will require more individual work from students. Most, however, favour a hybrid teaching method because the nursing study programme requires training in a clinical environment, which means working directly with patients.

The first lecture should be live, then remotely, otherwise the teacher should decide on the method of delivery (2). In the online world, it is considered very difficult to transfer a classic lecture to a purely online format (2). I can use all these online technologies for other spheres, for example meetings (3). We have some basics now, but we will need more support in the future. I need to learn some things that make me even more barefoot (2). Looking forward to the opportunity, but more time is required for preparation and technical support is important (4).

DISCUSSION

The aim of this study was to describe the teachers' experiences of digital teaching at nursing faculties in four countries that participated in the Erasmus+ Digital Education in the Nursing project - DEN. Our result showed that the use of digital technology in nurse education is a complex process, which includes, in view of the European directive, both theory and practice. To carry out practical training in a clinical environment, students must first acquire certain skills in a cabinet environment for high-quality and safe implementation of nursing interventions. The results of the present study showed that the teachers' sudden transition from the traditional way of teaching (face to face) at the onset of the pandemic to teaching using digital technology caused great frustration and awareness of insufficient knowledge. Adaptation had to be implemented quickly, so the teachers emphasised that they were not able to develop adequate digital competences and that they still need training in digital pedagogy in the future. Jowsey et al. [15] state that never in the history of education has there been such a rapid and extensive transition to a changed way of teaching. The rapid changes were made without the careful planning that teachers otherwise

prefer but this has been accepted as there were specific circumstances during the pandemic. However, it has also contributed to a lot of mistakes that have been criticised by the teachers themselves as well as by students. Our results showed that adequate training and adequate resources are necessary for high-quality and effective teaching and are in accord with the results acquired by Brinkley-Etzkorn [16]. Teachers' experiences during the pandemic contributed to a recognition of the advantages of digital teaching, which brings them challenges regarding the use of digital technology in the future. Innovations in computer technology have contributed to the expansion of e-learning and e-teaching and provide opportunities to use new teaching methods [17]. They showed that, on the one hand, e-teaching enables sharing of more information, is cost-effective, accessible, and easier for users to access via the World Wide Web, and on the other hand, means a huge management investment in the education system.

Our results showed that teachers were exposed to the same problem and that the fastest help almost always came from a colleague as the resources at universities were not sufficient for the major change that was underway in all areas. Experiences seem to be similar regardless of context and are also confirmed in another study by Sinacori [18], who conducted interviews with eight nurse teachers who had experience with face-to-face teaching and who switched to online teaching entirely or in a hybrid way. The teachers helped each other during the transition.

We realized that online teaching requires a complex new teaching strategy, that there is a lack of interpersonal contacts and a lack of other resources. A need for technical and professional help and knowledge of online pedagogy was also shown. The interviewees also highlighted the need for education, as the online learning environment differs from traditional classroom teaching. The success of online education will depend on the level of digital competence of nurse teachers. Perceptions of which is, according to Zhao et al. [19], different due to the different self-assessment of individuals.

Consistent with our study, Hampton et al. [20], studied online education at 100 faculties offering different levels of nursing study programmes and found that adaptability and the ability to cope with stressful situations are important predictors of self-efficacy in online teaching. The authors also noted that online education is more beneficial for students, as they can balance their personal and professional obligations, and that online education is essential for the next generation of nurses.

Zhao et al. [19] noted that the perception of digital competences is different due to the different self-assessment of individuals.

In Sweden, a national study was conducted among 1,400 teachers. Half of those included in the study were of the opinion that they were insufficiently trained to use digital tools. The researchers also found that satisfaction with such a teaching method was lowest in the last semester of education, which is, of course, a worrying observation [21]. The authors also state that various studies have shown that teachers have a low level of digital competence and that the use of digital technology has been insufficient due to their insufficient preparation for teaching. However, Tangül and Soykan [22] showed that there is a statistically significant difference between generations in the use of digital technology, which caused social isolation of individuals during the pandemic.

Cattaneo et al. [23] found in a survey of 1,692 teachers in Switzerland that the digital competences of teachers are an important condition for the effective integration of technology and education, as digitalisation has become an opportunity and a positive challenge for maintaining economic advantages and competitiveness. Digital education competences depend on the teacher's personal characteristics, such as age, gender, attitude to technology and the availability of infrastructure and management support in educational institutions. Teachers emphasise the need for different learning activities to encourage discussion, interactions and greater involvement of students, and they also need a common framework for group activities. The authors summarise the recommendations of Ilomäki et al. [24] that digital competence should include four components: technical skills and training for the use of digital technology, the ability to use digital technology in a meaningful way, the ability to understand the phenomenon of digital technology, and the motivation to participate and engage in digital culture.

Hampton et al. [20] state the fact that traditional teaching differs from online teaching, but neither method is better or worse, they are simply different. This is in accordance with the result of the present study, which showed that teachers identified beneficial aspects of digital education even if they were initially forced to adapt to new ways of teaching.

Limitation of this study

The study has some limitations. It is based on a qualitative research approach, so the interpretation of the results is subjective. Group interviews were conducted in different countries. Most of the participants were women, but on the other hand it reflects the gender distribution among teachers involved in the education of nurses. We studied the use of digital technology at only one educational institution in each country, so the results cannot be generalised for the entire country. As there are completely different levels of development and use of digital technology in each country, the comparison is also inadequate. However, to compare the four countries with their different conditions was not the aim of this study.

CONCLUSIONS

During the coronavirus pandemic, nursing educators faced many challenges. Educational institutions closed their doors, teachers taught from home and many of them had to face unfamiliar technology to deliver the content of curriculum. The aim of the study was to examine teachers' experiences with digital teaching methods at nursing colleges in four countries. The group interview design aimed to explore these experiences and perspectives for the future. As information and communication technology has brought new challenges to society as well as opportunities, it must be a challenge that also results

in educational institutions developing the digital competences of nursing students. They will need such competences in their future workplaces, as this is the only way they will be able to actively participate in the digital society.

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