ARCADA

ARCADA PUBLIKATION 1/2023

Best Practice Guide

DIGITAL AND BLENDED TEACHING AND LEARNING OF PRACTICAL SKILLS IN SOCIAL AND HEALTH CARE (DITEPRACT)

Nora Jansone-Ratinika, Jukka Surakka, Camilla Wikström-Grotell (Ed.)

Co-funded by the European Union

Arcada Publikation 1 / 2023

Redaktörer Nora Jansone-Ratinika, Jukka Surakka, Camilla Wikström-Grotell

Redigering: Maria Grotell

ISSN 1797-7134 (online)

ISBN 978-952-7365-17-5 (pdf)

Arcada

Helsingfors 2023

www.arcada.fi

PRESENTATION PAGE

Published by
Yrkeshögskolan Arcada Ab

Date of publication
10.3.2023

Editor(s)
Nora Jansone-Ratinika, Jukka Surakka, Camilla Wikström-Grotell

Title of publication
Best Practice Guide: Digital and blended teaching and learning of practical skills in social and health care (DITEPRACT)

Type of publication	Contracted by	Date of contract
Best practice guide	Ditepract-project	n/a

Keywords
Digital learning, blended learning, practical skills, digital pedagogical competencies, learning scenarios, e-learning

Name and Number of Series	ISBN	ISSN
Arcada Publication 1/2023	978-952-7365-17-5 (pdf)	1797-7134 (Online)

Language	Pages	Price	Confidentiality
English	65	-	None

Distributed by
Arcada
Jan-Magnus Janssonin aukio 1
00560, Helsinki
0207 699 699

Publisher
Arcada University of Applied Sciences

CONTENTS

Camilla Wikström-Grotell & Jukka Surakka, Arcada UAS, Finland
Digital and blended teaching and learning competencies of academic staff: a collaboration between six universities (DITEPRACT) ……..6

Anne Söderlund, Mälardalen University, Sweden
Exploring the activities and outcomes of digital and/or online teaching and learning of practical skills in higher education for the health professions – a scoping review ….....…….……8

Halil Ersoy, Baskent University, Turkey
Digital competence of academic staff & recommendations for raising digital competence ……..……...……10

Sultan Kav & Cigdem Baskici, Baskent University, Turkey
The experiences of the academic staff on online practical training: a qualitative study from six universities…….……...……15

Antonio Manuel Fernandes, Hugo Leiria Neves, Daniela Cardoso & Verónica Rita Dias Coutinho, Nursing School of Coimbra, Portugal
Best practices in online and blended-learning scenarios for teaching and learning of practical skills: a pilot study from six universities.....…….… 20

Nora Jansone-Ratinika, Katrīna Elizabete Puriņa-Biezā, Zane Kadakovska, Jana Jansone, Raimonds Strods; Riga Stradins University, Latvia
Navigator through forms of study organisation: How to choose an appropriate study design?.....……..……26

Editors & Author bios……37

ANNEXES: 1, 2 a-f, 3

EDITORIAL FOREWORD

When communities worldwide were closed in the spring of 2020 when the Coronavirus disease (COVID-19) pandemic hit the world, the consequences for higher education in Europe were extensive. In a flash, higher education activities were moved online without enough time for neither preparation nor planning. Both students and the university's staff had to adapt to major changes in daily life. Follow-ups and evaluations showed that the universities coped with the change surprisingly well, but also that the challenges in teaching and learning were many, both for students and staff.

Six universities from different parts of Europe, which previously cooperated in different ways in the social and health care field, specifically identified teaching practical skills online as challenging. The project DITEPRACT (Digital and Hybrid Teaching and Learning of Practical Skills in Higher Education) was granted ERASMUS+ funding for a two-year project, which started in March 2021. This guide, which is the final output of the project, presents the project's aims and results shortly and makes recommendations regarding online and hybrid teaching and learning of practical skills in social and health care education. The guide is written because we want to share what we have developed and learned together with other universities in Europe.

The cooperation within the network has worked excellently. Differences between universities and countries have contributed to development in the higher education context. We have shared our experiences, learned new things and solutions together and from each other. Today we know that the changes that took place during the Coronavirus Pandemic have long-lasting consequences and that there are many different needs to continue developing new blended methods and strategies for teaching and learning. Higher education also faces many other challenges and uncertainties, not least increased gaps and insecurity in society. Our hope is that the collaboration between the universities in the DITEPRACT network will be long-lasting and take new forms in the future even when the project is over. Finally, the management group for the project would like to thank everyone who participated and contributed in various generous ways with curiosity, an innovative mind, engagement and professional competence.

Ditepract management team
Arcada University of Applied Sciences, Finland: Janina Hannelius, Jukka Surakka & Camilla Wikström-Grotell
Baskent University, Turkey: Sultan Kav & Cigdem Baskici
Nursing School of Coimbra, Portugal: Antonio Manuel & Hugo Neves
Lithuanian University of Health Sciences, Lithuania: Aurelija Blazeviciene & Zivile Kepezinskiene
Mälardalen University, Sweden: Anne Söderlund
Riga Stradins University, Latvia: Evita Grigorovica & Raimond Strods

Digital and blended teaching and learning of practical skills: a collaboration between six universities (DITEPRACT)*

Camilla Wikström-Grotell[i] & Jukka Surakka[ii]

The global Covid-19 pandemic that hit the world at the beginning of 2020 has had both short-term and long-term consequences in almost all areas of society, including higher education. Universities around the world closed their doors for safety and health reasons. With a very tight schedule, teaching and other activities moved online and management, staff and students faced completely new challenges.

The Digital and Hybrid Teaching and Learning of Practical Skills in Higher Education (DITEPRACT) project funded by the European Union Erasmus + KA2 (number: 2020-1-FI01-KA226-HE-092515) is a result of a collaboratively identified common need for development in six partner universities autumn 2020, half a year after the corona pandemic forced universities to move their activities online (Arcada 2021). The increasing use of digital information and communication technologies as well as the Covid-19 pandemic has led to the use of new ways of teaching and learning of practical skills. The academic staff has been forced to acquire new digital competencies and act on a new virtual arena. Digital technologies pave the way for new pedagogical approaches that encourage active and student-centered learning. Hybrid and blended education models that combine face-to-face learning and online education have been widely adapted, especially in disciplines that provide practical education. Practical skills in the field of social and health care have proven to be particularly challenging when it comes to online learning. Therefore, not only students' good use of technology, but also the role of academic staff is crucial. The importance of having various technical resources and qualified academic staff is indispensable for a high-quality education. The competencies of effective academic staff in discipline, pedagogy and technology come to the fore, while others argue that the adequacy of more complex approaches, such as safety and ethics, should be considered holistically to increase productivity.

The aim of the DITEPRACT collaborative development project is to assess and create support for digital teaching competencies of academic staff regarding practical skills in social and health care across six universities in six countries. Furthermore, we want to share results from:

* We thank the European Union for co-funding this project with Erasmus+ grants.
[i] Arcada University of applied sciences, Finland, camilla.wikstrom-grotell@arcada.fi
[ii] Arcada University of applied sciences, Finland, jukka.surakka@arcada.fi

1. A litterature review that has contributed with an overview of evidence-based pedagogical solutions for supporting learning of practical skills in digital, hybrid, blended teaching and learning
2. a description of digital and hybrid teaching competence among academic staff based on self evaluation survey and using a standardized questionnaire EduComp
3. experiences of strengths and limitations of ongoing digital and hybrid pedagogical activities in the partner universities collected end of the spring 2021, based on focus group interviews in the partner universities
4. six learning and teaching scenarios developed in simulation environments in the partner universities
5. a checklist for supporting choice of digital and / or hybrid study design.

The five points mentioned above constitute the structure of our best practice guide and address various aspects of digital and hybrid teaching and learning. These can contribute to the development of practical skills in social and health care in virtual learning environments among higher education students.

In the area of health, a central principle is evidence-based practice or activities that are based on the best available scientific knowledge, the patient's perspective and ethical evaluations. Also in education, it is important that the pedagogical strategies and activities are evidence-based and support students' learning in the best possible way. There are several accepted methods for determining the level of evidence for scientific knowledge, based on study design and quality in research. In this guide, we describe how the data we rely on has been collected and analysed. On an overall level, we have used more qualitative than quantitative approaches. Our recommendations are mainly based on consensus expert opinion, as experts from six universities participated in data collection and analysis, conributed with their knowledge and experience, and finally jointly answered the questions posed and made recommendations.

REFERENCES

Arcada. (2021). *DITEPRACT: Digital and hybrid teaching and learning*. https://www.arcada.fi/en/research/key-research-activities/ditepract-digital-and-hybrid-teaching-and-learning

Exploring the activities and outcomes of digital and/or online teaching and learning of practical skills in higher education for the health professions– a scoping review

Summarized by Anne Söderlund[i]

A digital student-centered and competency-based approach to learning facilitating active engagement of students by authentic, meaningful and positive learning experiences is important to develop, especially in purpose of learning practical skills in higher education of health care professionals. Virtual learning environment (VLE) for digital teaching and learning is often web-based and thus accessed by students and teachers regardless of geographic location. VLE often provides course material but can also include assessment, tracking, collaboration, and communication modules. The higher education of health care professionals has numerous challenges, not least in the area of teaching and learning of practical skills. It is important to develop and apply methods supporting the education of the practical skills.

This scoping review aimed to explore the activities and learning outcomes of digital and/or online technology in practical skills teaching and learning in higher education for the social and health professions.

The PRISMA-ScR checklist for scoping review was used to support the reporting of the scoping review. Randomized controlled trials, published between 2016 and 2021, involving students in higher education in the social and health care and interventions with digital and/or online technology activities and practices in practical teaching and learning were included. The CINAHL Plus, PubMed, Scopus, ERIC, Sociological Abstracts/Social Services Abstracts databases were searched.

Forty-nine studies on dentistry, medicine, nursing, and midwifery programs from a wide range of countries were included in the final stage (Söderlund et.al. 2023). Thus, the presentation of higher education in the social and health professions was much narrower than what we believed it would be. The included studies were from a global variation of countries. Teaching and learning environments, methods, resources, and activity characteristics varied, making summary of the studies' results difficult. Interventions were often developed in a face-to-face format and thereafter digitalized. There was no information about the digital environment for the intervention in approximately half of the studies. Half of the studies measured outcomes at the knowledge level but seldom at the performance level. One-third of the studies showed a significant improvement in practical skills in the intervention group compared to the control condition. However, one-third showed no between group differences in practical skills, even though it was stated that confidence

[i] Mälardalen University, Sweden, anne.soderlund@mdu.se

in practical skills and motivation for using digital resources were increased in many of the intervention groups.

The teaching and learning methods comprised three categories, hybrid/blended, e-learning/online and simulation-based, but the digital tools varied greatly, as did the learning environments, making it difficult to draw conclusions. The use of digital and/or online technology in the learning and teaching process can contribute to the development not only of students' skills but also their knowledge, motivation, and attitudes towards digital resources in learning of practical skills. Furthermore, the results suggest that there are positive implications for using digital practical skills teaching and learning methods. However, these methods may be most useful when applied alongside with traditional face-to-face methods. The pedagogy of technology use is decisive. The development of new digital methods for teaching and learning practical skills requires engaging students and teachers, not only the researchers.

REFERENCES

Söderlund, A., Blazeviciene, M., Elvén, M., Vaskelyte, A., Strods, R., Blese, I., Paakkonen, H., Fernandes, A., Cardoso, D., Kav, S., Baskici, C., Wikström-Grotell, C. (2023). Exploring the activities and outcomes of digital teaching and learning of practical skills in higher education for the social and health care professions: A scoping review. *Discover Education 2* (2). https://doi.org/10.1007/s44217-022-00022-x

Digital competence of academic staff & recommendations for raising digital competence

Halil Ersoy[i]

Introduction

To raise awareness and increase the benefits of digital technologies (DT) in health education, a European Union Erasmus+ KA2 project, titled "Digital and Hybrid Teaching and Learning of Practical Skills in Higher Education" was launched in 2021 with six global partner higher education institutions. The primary aim of the project was to explore and map DT experiences, current activities, and practices in subject-specific practical teaching, training, and learning in higher education in the field of social and health care. To propose and validate a sound digital competence (DC) enhancement frame, a systematic analysis of the current DC levels of academic staff in the partner institutions was required. Accordingly, in this research, it is aimed to assess the digital teaching competencies of academic staff in social and health care disciplines and explore the current conditions at six universities in six countries.

Method

To define and assess the DC level of academic staff, DigCompEdu framework and a self-assessment approach were applied. (DigCompEdu, 2021). According to the framework, digital competency is:

> "... an ability to use digital technologies not only to enhance teaching, but also for their [educators'] professional interactions with colleagues, learners, parents and other interested parties, for their individual professional development and for the collective good and continuous innovation in the organization and the teaching profession" (Redecker, 2017, p19)."

The emphasis of in this definition was not on specific technical skills, rather on awareness, utilization, and organization of DTs by educators in six areas of professional engagement, digital resources, teaching and learning, assessment, empowering learners, and facilitating learners' DCs. (DigCompEdu, 2021).

As a data collection instrument, a 22-item "DigCompEdu Self-Reflection Tool,", developed within the DigCompEdu project (DigCompEdu, 2021), was used to determine the DC of academic staff. The questionnaire comprises 22 competence questions organized in six areas: professional engagement, digital resources, teaching and learning, assessment, empowering learners, and facilitating learners' DC. The responses for each question hold a value between 0 and 4 points. The maximum total number of points is 88. Based on the score, the DC level of a participant is described by one of six sequential levels prescribed in Table 1.

[i] Baskent University, Turkey, halil.ersoy@gmail.com

Table 1. Definition of DC Levels at DigCompEdu Framework

Level	Role Describer	Range of Score*	Explanation**
A1	Newcomer	0-19	Aware of DT but limited or any usage. Needed guidance and encouragement
A2	Explorer	20-32	Aware and using of DT, but without consistent and comprehensive ways. Needed encouragement and inspiration.
B1	Integrator	33-49	Using DT in education consistently and integrating in various practices, but need time and experience to make right decisions about DT
B2	Expert	50-65	Using variety of DT consistently, creatively, and critically. Open for exploration.
C1	Leader	66-80	Using and having variety of DT in their repertoire. Reflecting and leading peers about DT
C2	Pioneer	81-88	Using DT and experimenting with DT to develop new pedagogical practices.

** The range scores are published by Toker, Akgün, Cömert & Edip (2021).*

*** The explanations are published at DIGCOMPEDU (2022) Framework web site.*

Permission to use the questionnaire was obtained from the DigCompEdu project team via e-mail (JRC-DIGCOMPEDU@ec.europa.eu) before the study started. Each partner country used the validated version of the questionnaire. Finland and Sweden used the English version of the questionnaire. While Turkey, Portugal, and Lithuania reached and used the validated version in their native language, Latvia translated it into their language. The research population comprised the academic staff from six universities in the project's partner countries during the academic year 2020–2021. Convenience sampling was used and 306 academic staff members, teaching practical skills, from various departments in health and social sciences participated voluntarily. The distribution of participants among six countries and their average age with average teaching experience are given in Table 2.

Table 2. Characteristics of participants from each country

Country	Number of Academic Staff	Average Age	Average Teaching Experience in Years
Finland	19	50.3	13.1
Latvia	130	46.9	15.3
Lithuania	25	47.0	16.4
Portugal	62	48.8	15.2
Sweden	15	51.6	14.2
Turkey	55	41.2	11.8
Total	306	46.7	14.6

Results

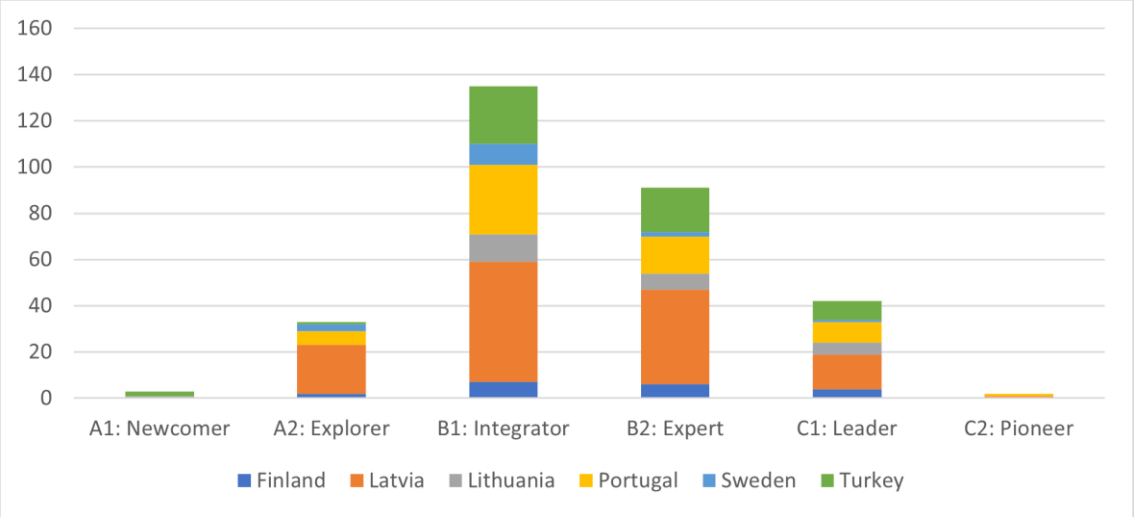
According to the DigCompEdu scale, the majority of academic staff have medium level DC as an *integrator* (B1: 44.1%) or *expert* (B2: 29.7%), which means they are capable of using available DTs in teaching and developing their own repertoire (Table 3). This medium level is parallel with other the studies done in higher education (Jorge-Vázquez et al., 2021; Guillén-Gamez & Mayorda-Fernández, 2020). The least participants were in the *newcomer* (A1) and *pioneer* (C2) categories, representing the two extremes of DC respectively 1% and 0.7%.

Table 3. DC Levels of Academic Staff

	Finland	Latvia	Lithuania	Portugal	Sweden	Turkey	N	%
A1: Newcomer	0	0	1	0	0	2	3	1.0
A2: Explorer	2	21	0	6	3	1	33	10.8
B1: Integrator	7	52	12	30	9	25	135	44.1
B2: Expert	6	41	7	16	2	19	91	29.7
C1: Leader	4	15	5	9	1	8	42	13.7
C2: Pioneer	0	1	0	1	0	0	2	0.7
Total							306	100

While 14.4% of participants were in higher levels of the leader (C1, 13.7%) or pioneer (C2, 0.7%), the least number of participants (11.8%) were in lower levels of *newcomer* (A1, 1.0%) or *explorer* (A2, 10.8%) levels (Figure 1).

Figure 1. Frequency of Participants According to Their DC Level



The cross-sectional design, the self-assessment tool of DigCompEdu framework, and the use of non-probabilistic sampling are the limitations of the study.

Best practice recommendations

The results of research study showed that majority (73.8%) of the academic staffs' digital competence is *intermediate* level, labeled as an *integrator* or *expert* according to DigCompEdu scale. On the other hand, 14.4% of participants fall into the upper levels of *leader* or *pioneer*. Those findings imply that academic staff are capable of using available digital technologies for their own demands yet need to be supported to be a *guide* for their colleagues or students. Therefore, institutional support in terms of delivering new or advanced digital competence is suggested.

The finding showed that the experience in digital technologies in teaching has a positive effect on digital competence; therefore, in line with field specific learning outcomes in social and health care education, design and construction of learning environments decorated with effective, efficient and easy-to-access digital technologies are proposed for institutions.

Even though only 11.8% of participants claimed to have low level digital competence, tailored and self-paced training opportunities are advocated for those *newcomers* or *explorers*. For those, contextual factors hampering use of digital technologies should be uncover with empirical studies.

In terms of advanced or field-specific DT for teaching/learning, 55.9% of the participants said that they had software or applications for specific tasks. Augmented/virtual reality tools were the least owned advanced or field-specific DT (24.8%). Likewise, the academic staff had relatively low usage ratio for field-specific DT. Simulations and augmented/virtual reality tools had the lowest usage ratio, because such tools might require more sophisticated peripherals, scenarios, and expertise. In proportion to their educational benefits, integration of those tools might be provided by the institutions since individually developing and/or using such tools could be difficult.

In order to benefit from digital technologies, not only learning environments, but also teaching and learning strategies should be re-designed. Mobility of students and academic staff across institutions might enrich their digital competence by experiencing different tools and scenarios. Utilizing online and open learning strategies may improve collaboration with other institutions for the best practices.

REFERENCES

DigCompEdu, (2021, February 30). Digital Competence Framework for Educators (DigCompEdu). EU Science HUB. https://ec.europa.eu/jrc/en/digcompedu. Accessed 2 Feb 2022.

DigCompEdu, (2022, June 9) Digital Competence Framework for Educators. https://joint-researchcentre.ec.europa.eu/digcompedu_en. Accessed 9 June 2022.

Guillén-Gámez, F. D., & Mayorga-Fernández, M. J. (2020). Prediction of factors that affect the knowledge and use higher education professors from Spain make of ICT resources to teach, evaluate and research: A study with research methods in educational technology. *Education Sciences*, 10(10), 276.

Jorge-Vázquez, J., Náñez Alonso, S. L., Fierro Saltos, W. R., & Pacheco Mendoza, S. (2021). Assessment of Digital Competencies of University Faculty and Their Conditioning Factors: Case Study in a Technological Adoption Context. *Education Sciences*, 11(10), 637.

Redecker, C., (2017) European Framework for the Digital Competence of Educators: DigCompEdu. Punie, Y. (ed). EUR 28775 EN. *Publications Office of the European Union*, Luxembourg, 2017, ISBN 978-92-79-73494-6, doi:10.2760/159770, JRC107466. https://publications.jrc.ec.europa.eu/repository/handle/JRC107466. Accessed 28 Jan 2022.

Toker, T., Akgün, E., Cömert, Z. & Edip, S. (2021). Eğitimciler İçin Dijital Yeterlilik Ölçeği: Uyarlama, Geçerlik ve Güvenirlik Çalışması. *Milli Eğitim Dergisi*, 50 (230), 301-328. doi:10.37669/milliegitim.801607. https://dergipark.org.tr/en/pub/milliegitim/issue/62237/801607. Accessed 4 April 2022.

The experiences of the academic staff on online practical training: a qualitative study from six universities

Sultan Kav[i] & Cigdem Baskici[ii]

Introduction

The quarantine and social distance precautions due to the COVID-19 pandemic has not only brought exhaustive alterations in all aspects of life, but also made it impossible to sustain traditional teaching and learning in educational institutions (Pokhrel & Chhetri, 2021). The shift in teaching methods has placed greater pressure on educators, who have to design online courses that target learning practical skills in fields such as health sciences (Forde & OBrien, 2022). Online education has presented new prospects to teach and learn in more innovative ways compared to the experiences offered by the traditional classroom environment (Pokhrel & Chhetri, 2021). To take advantage of these opportunities, in depth understanding of those processes is necessary.

The aim of this qualitative study was to explore the experiences of the academic staff on the online/digital practical teaching.

Material and Methods

This research was undertaken as part of the Erasmus+ project, titled "Digital and Hybrid Teaching and Learning of Practical Skills in Higher Education (DITEPRACT)". The purposive sampling method was used to select participants (Patton, 2002). This study was carried out between June and November 2021.

The data was collected via focus group, in-depth interview technique. The interview questions were developed by the research team according to the literature review through the discussions with the project partners. It consisted of the following open-ended main questions:

1. What is your experience using digital technology (DT)ies in practical teaching activities?
2. How is your satisfaction from existing online practical teaching?
3. How did you gain DT competency?
4. Advantages and disadvantages of DT in practical teaching?
5. How do you ensure student's active participation for using DT in practical teaching?
6. What barriers exists in online practical teaching?
7. Suggestions for improving online practical teaching (software, environment, curriculum, etc.)

[i] Baskent University, Turkey, skav@baskent.edu.tr
[ii] Baskent University, Turkey, cbaskici@baskent.edu.tr

Data were analyzed by Colaizzi's method to find, understand, and describe academic staff's experiences (Colaizzi, 1978; Morrow, Rodriguez, King, 2015). During the analysis, the written interviews were coded by reading the sentence in order to make their meaning more understandable. Similar expressions were grouped together.

Results and best practice recommendations

In this study, 22 focus group studies were conducted with a total of 117 participants. All participants reported that online/digital teaching had impacted their practice (Table 1). Data revealed main themes as: Digital technology (DT) skill development, Advantages of online/digital teaching, Disadvantages of online/digital teaching, Online teaching barriers, Online teaching improvement recommendations.

The findings of the study offer important insights to enable successful integration of digital technologies and online teaching for practical skills. Understanding the educator experiences of online/digital practical teaching and training in health science education can increase student engagement and improve learning outcomes. The pedagogy used for face-to-face education is not suitable for online/digital practical education. Especially technologically backward teachers need appropriate professional development and training to orientate themselves to their students. We only included experiences of academic staff in this research. Experiences of institutions and students could be explored in the future research.

Based on the findings of the qualitative research study, which is aimed to explore the experiences of the academic staff on the online/digital practical teaching and digital technologies in social and health care, following recommendations are provided for stakeholders.

The results of research study showed that academic staff used two ways for developing their DT skill. One is the informal way such as individual effort and social networks. The second is a formal one, such as attending a course/certificate program and using step-by-step guidelines. However, academic staff emphasized the necessity of increasing training in a formal way in the development of their competence. For this reason, it is recommended to increase education in universities for enhancing DT skills.

As opposed to traditional classroom teaching, online education has made it possible to access courses through a single Internet connection. However, the findings showed that compared to traditional classroom teaching, online education has its drawbacks, including limited interaction between academic staff and students, spending more time to prepare for the lesson, impact on personal and family dynamics. To increase interaction between two parties, academic staff should realize that online education is student-oriented and accordingly develop course designs that will ensure active participation of students.

The findings showed that online education also offers many opportunities such as using different pedagogical approaches, flexibility, and accessibility when comparing traditional classroom teaching. However, universities have had fundamental barriers in front of online education such as network instability, insufficient physical space, and equipment failure. To take advantage of the opportunities, removal of barriers is of paramount importance. Additionally, not all students have had equal access to online education. In

this point, efforts and roles of universities and states are very critical for equality in online education.

Table 1: Main findings impacting teaching and learning practices

THEME	SUBTHEME	CATEGORIES
Digital technology skill development	1. Informal ways 2. Formal ways	1.1. From social network, Individual effort, Contribution of other academic staff 2.1. Course/certificate program, Step-by-step guidelines
Advantages of online/digital teaching	**For academic staff** 1. Improved learning environment 2. Improved time management 3. Resources	1.1. Use of different pedagogical approaches, Fewer distractions 2.1. Less traveling time, Ease of exam evaluation, Variation in accessibility 3.1. Easy access to digital resources
	For students 1. Personal benefits 2. Academic achievement 3. Resources	1.1. Time flexibility, Less travel burden, Home comfort, Easy access to the academic staff 3.1. Easy/fast access to information, Replaying the recordings
Disadvantages of online/digital teaching	**For academic staff** 1. Deterioration of relations with students 2. Difficulties related to time management 3. Health-related consequences	1.1. Unable to visualize and know the student, Lower interaction, Invasion of privacy 2.1. Need more time to prepare for the lesson, Impact on personal and family dynamics, 3.1. Physical, Emotional
	For students 1. Limitations in learning methods 2. Psychological consequences 3. Physical consequences	1.1. Limitation of the practical component 2.1. Isolation, Privacy invasion 3.1. Impact on posture, Eye fatigue
Online teaching barriers	**For academic staff** 1. Issues with resources 2. Characteristics of the courses 3. Issues with academic staff	1.1. Network instability, Equipment failure, Coordinating work with colleague, Working in the same room, Lack of technical support 2.1. High number of students 3.1. Lack of knowledge for the use of resources
	For students 1. Issues with resources 2. Students' knowledge	1.1. Network instability, Difficulties in accessing technological devices 2.1. Insufficient training 3.1. Crowded home environment and sound

	3. Issues with the environment	
Online teaching improvement recommendations	1. Needs of academic staff 2. Needs of student 3. Institutional supports	1.1. Personalized online training 2.1. Economic aids, Creating physical space possibilities 3.1. Invest in resources and materials, Hybrid classrooms, Reduce the number of students per class, Technical support

REFERENCES

Colaizzi, P. (1978). Psychological Research as the Phenomenologist's View It. In: Vale R, King M, editors. Existential–Phenomenological Alternatives for Psychology. New York, NY: Oxford University Press.

Forde, C., & OBrien, A. (2022). A Literature Review of Barriers and Opportunities Presented by Digitally Enhanced Practical Skill Teaching and Learning in Health Science Education. *Medical Education Online, 27*(1), 2068210.

Morrow, R., Rodriguez, A. and King, N. (2015). Colaizzi's Descriptive Phenomenological Method. *The Psychologist, 28* (8). 643-644. ISSN 0952-8229.

Patton. M. Q. (2002). Qualitative Research and Evaluation Methods (3rd ed.). Thousand Oaks, CA: Sage Publications.

Pokhrel, S., & Chhetri, R. (2021). A Literature Review on Impact of COVID-19 Pandemic on Teaching and Learning. *Higher Education for the Future, 8*(1), 133-141.

Best practices in online and blended-learning scenarios for teaching and learning of practical skills: a pilot study.

Antonio Manuel Fernandes[i]; Hugo Leiria Neves[ii]; Daniela Cardoso[iii]; Verónica Rita Dias Coutinho[iv]

Introduction

With the COVID-pandemic, limited access to on-campus learning environments and traditional simulation and classic resources caused the migration of teaching to online learning. After the difficulties and constraints experienced during the emergency remote teaching due to the pandemic, higher education institutions need to reconsider and reconfigure their educational models.

This situation challenges high-quality health education, particularly regarding practical skills learning. Thus, integrating virtual learning environments (VLE) into the teaching-learning processes and developing VLE pedagogical concepts and models is crucial to overcome these challenges. As part of this process, educators must develop and integrate learning scenarios of practical practices (didactic-pedagogical materials) suitable for virtual environments.

One of the project's main objectives is to provide principles and guidelines that help educators use digital didactics, understand online education quality, and use best-practice for blended learning scenarios. This pilot study aimed to provide principles and guidance based on learning scenarios experiences, which can be applied in the digital and hybrid teaching and learning of practical skills in health and social sciences higher education. For this to be achieved, the DITEPRACT partners tested new and innovative learning scenarios in pilot studies, developed in specific thematic areas in line with the results of the scoping review and experiences of the academic staff on online practical training, which were identified in the qualitative study.

Methods

The project team developed a template (Annex 1) to guide a comprehensive b-learning scenarios plan development. Specific scenarios were carried out by each partner university (Baskent University (BU), Arcada University of Applied Sciences (Arcada), Nursing School of Coimbra (ESEnfC), Lithuanian University of Health Sciences (LSMU), Mälardalen University (MDU), Riga Stradins University (RSU). All scenarios (Annex 2 a-f) were student-centred, case and problem-based b-learning activities in a combination of complementary and interdependent online synchronous, asynchronous, and face-to-face experiences, except for RSU who developed an e-learning activity (on-line synchronous and asynchronous).

[i] Nursing School of Coimbra, Portugal, amanuel@esenfc.pt
[ii] Nursing School of Coimbra, Portugal, hugoneves@esenfc.pt
[iii] Nursing School of Coimbra, Portugal, dcardoso@esenfc.pt
[iv] Nursing School of Coimbra, Portugal, vcoutinho@esenfc.pt

In a mixed design of pre- and post-test (pre-experimental pilot study) for some outcomes, and post-test design for others, the learning scenarios case-based to b-learning/e-learning modality were tested and evaluated by students and teachers.
A questionnaire was used in pre- and post-test to collect data (Annex 3). The questionnaire was composed by two parts. The first part addressed questions to assess through a 10-point Likert-scale ranging from 1 (strongly disagree) to 10 (strongly agree) the following constructs: i) Confidence in the capacity to self-direct b-learning in VLE (pre- and post-test); ii) Student's perception of b-learning facilitators; iii) Teachers evaluation of the b-learning activity (post-test). The second part was composed by scales, namely: i) Student's perceptions of b-learning pedagogical and technical domains scale; ii) Country-validated versions of the Satisfaction and Self-Confidence in Learning Scale© and iii) Simulation Design Scale ©. Data were analysed using the Statistical Package for the Social Science (SPSS®) version 28 for Microsoft Windows. The independent t-test (paired sample test) was used to compare self-directed learning confidence in VLE before and after learning scenario development. Correlations between different scores (satisfaction, self-confidence in learning, perception of pedagogical and technical b-learning domains, and learning facilitators scores) were analysed with the Pearson correlation coefficient. The level of significance was set at .05 for all tests.

Findings

Confidence in the self-direct capacity of b-learning in VLE significantly increased after the use of the learning scenarios developed ($p<.001$), except for one university in which the trend was clear, but none of the changes could reach the level of statistical significance ($p<0.05$). Perception of how much the b-learning facilitators were facilitative is highly significant (>8). The Student's Satisfaction and Self-confidence in Learning scores also had very high ratings for all universities. Overall, students felt very satisfied with the feedback and how it was given. They agreed that the learning materials were provided and helped them achieve the study's aim (average >4.5).
Satisfaction and self-confidence in learning scores were statistically correlated with learning facilitators ($p<0.001$).
Significant correlations ($p<0.001$) were found between the item "Confidence in the student's skills needed to learn in a virtual learning environment" and four of the learning facilitators' items (F1, F2, F4, F7).
In general, students had a very positive perception (average >8) about the pedagogical and technical domains and respective items of b-learning. Those indicators (items) are positively and strongly or moderately correlated with student satisfaction and self-confidence in learning.
Teachers consider the inclusion of the b-learning teaching modality in the methods to be used to develop practical skills as extremely important, and strongly agree that these e-learning proposals are applicable to the teaching of practical skills. It was also agreed that they are replicable for other contexts, contents, and training levels.
They agreed that the template for planning the activity is clear and a facilitator of management of the teaching/learning activity and consider it extremely important to the structuring/planning of the activity.
They agreed that the proposed virtual environment was collaborative, which facilitates the supervision of students' performance and interactions as well as provides timely feedback to students, which is, in their opinion, extremely important.

Teachers also strongly agreed that the methodology used promotes student accountability/autonomy in managing their learning and provides students with personalized learning opportunities, aspects they consider very important.

Discussion

All learning scenarios tested were case-based, followed the template provided and were tailored according to each university's context and participants. Case-based learning is an important teaching tool that resembles a real-life situation, incorporates real-life factors, circumstances and variables, and presents content relevant to practice as well as facilitates the connection between theory and practice (McLean, 2016). This aspect was highly scored and significantly correlated with satisfaction and self-confidence in learning, as well as post-tested confidence in the self-directed capacity of b-learning in VLE. In addition, students strongly agreed that clinical case design improved the learning experience. These findings align with Kaur et al. (2020), who conclude that case-based learning scenarios improve students' motivation, satisfaction, and engagement. The results show high student satisfaction and self-confidence in the learning provided.

These outcomes, positive indicators and experiences measured are in agreement with various authors who identified high satisfaction with blended learning and reported students' good learning experiences in this kind of process of practice learning (Pérez-López, & Rodríguez-Ariza, 2011; Gerdprasert et.al. 2011; Al-Fraihat et.al.2019; Ibrahim et al., 2021; El-Hawy et.al. 2022). Also, in the scoping review that was performed by Söderlund et al. (2023) students' overall satisfaction with digital learning environments was described in similar descriptive studies. A meta-analysis performed by Du et al. (2022) goes a little further by evidencing that b-learning impacts more learning satisfaction than traditional learning.

In addition, we found a significant correlation between student satisfaction and self-confidence in learning and perception of how much b-learning facilitators were facilitative. A significant correlation between the perception of pedagogical and technical b-learning quality indicators (domains and items) was also found in our study.

Confidence in the self-direct capacity of b-learning in VLE increased after learning scenario participation in the pilot studies. Aspects such as confidence in their ability to use online digital resources to develop practical skills and the ability to self-directed learn practical skills were significantly different in a positive way. It is noticed that this participation promoted self-directed learning proficiency, which is vital in the b-learning modality (Barron, 2006). This increase confirms the positive attitude towards the b-learning provided activity, its perceived value (Isik, 2006) and the belief that b-learning offers personalized, flexible and innovative learning opportunities (Blissitt, 2016).

Student-centeredness is one of the keys to achieving student satisfaction and motivation, and thus also influences the effectiveness of learning (le-Roux & Nagel, 2018). It is not surprising, therefore, that the study participants considered that the methodology used promoted student accountability/autonomy in their learning and that the autonomy provided in its management was an important facilitator. Facets such as personalized rhythm, freedom in managing access and use of the digital simulator (repetition) as well as time provided for training skills/competencies contributed to this appreciation.

Still, regarding student-centred learning, one of the biggest contributions was the information and feedback provided in the VLE and the individual and collective tasks follow-up, which positively and significantly correlated with satisfaction and self-confidence in learning. Students classified the feedback given by the teacher and the way it was given

as of extreme importance and one of the aspects considered highly relevant for personal development and motivation, as well as a result of the personalized support provided.
In addition, the easy and permanent accessibility to information, clear instructions, and learning materials provided to achieve the study's aim were considered extremely facilitating and were positively and significantly correlated with the satisfaction and the self-confidence in learing.
Like the previous ones, these results validate the quality of planning and application of the proposed learning scenarios. They are of extreme importance because the student's perception of the quality is also influenced by factors such as pre-implementation information (Vitoria et.al. 2018) as well as ongoing information, which should be available and accessible as long as the reader has an internet connection (Weis, 2021).

Conclusion

Based on the results, we can conclude that the students reacted very positively to the experience with the b-learning activity provided. A high level of satisfaction, self-confidence in learning, and confidence in the capacity to self-direct learning in VLE was perceived from b-learning scenarios, which led students to have a positive attitude towards learning.
Case-based scenarios and student-centred b-learning planning were also determinants for this feeling. The model proposed proved to be an instrument capable of ensuring the standards required for successful blended or hybrid teaching and learning of practical skills. The participation promoted student self-directed learning proficiency, directly impacting the skills needed to learn in a virtual learning environment and self-directed ability to learn practical skills.
Students demonstrated a very positive perception of the pedagogical and technical domains of b-learning activity, considering these essential components to them engaging in b-learning scenarios. Feedback given by the teacher and individual and collective task follow-up were some of the many aspects considered highly relevant for personal development and motivation.
For teachers, the proposed modalities are applicable to the development of practical skills and most of the aspects and criteria used in the design of the b-learning activity are extremely important for successful learning. A standard template that guides planification was also seen as very useful and extremly important.
Pilot studies (test b-learning scenarios) provide a set of principles and guidelines and reinforced others previously identified in the literature, which can be applied in the digital and hybrid teaching and learning of practical skills in higher education in the health and social sciences fields.

Good practice statement and practice recommendations

Case-based scenarios and student-centred blended learning can support education and practical skills development with engaged learners. For this, well-designed clinical cases and scenarios suitable for digital tools and virtual learning environments (hybrid and b-learning) are fundamental.
Based on our studies, blended learning could be improved by incorporating some proposals and facets that proved very suitable. Therefore, different stakeholders, in particular teachers, who wish to use those pedagogical strategies and ensure students' meaningful practices should consider the following recommendations:

- A comprehensive template (script) that guides how learning scenarios should be planned on b-learning or h-learning modalities is essential for all those preparing to use b-learning-based learning scenarios;
- Its structure should allow standardizing the scenario's design by incorporating fundamental practices of blended or hybrid teaching and learning of practical skills;
- The standard template should provide recommendations for learning scenario definition (clinical case description), scenario online-setup, and scenario learning development (implementation);
- Plan of b-learning activity design must ensure the scenario is tailored according to students (target audience and, if necessary, pre-requisites and background) and cultural context;
- The learning scenario should be case-based, and the b-learning modality student-centred.
- Scenarios resemble real life, including factors, circumstances and variables of the same;
- When the practical competence to be developed through the scenario involves a technical and psychomotor skills component (hands-on), we must privilege blended or hybrid learning;
- Combine face-to-face and online synchronous and asynchronous activities in an integrated and complementary way;
- Access to guidelines/instructions on navigation in the environment is (must be) easy and permanent;
- Teachers should demonstrate that they are focused on learner success: care enough to inquire when a learner is absent; provide timely and meaningful individual and collective feedback; provide task follow-up;
- The student must be guaranteed autonomy in learning management (time management, access time, repetition in navigating and completing challenges, personalized rhythm);
- Ensure intuitive navigation and aesthetic and creative interface;
- Easy and permanent accessibility to instructions, content, resources and tools available;
- Educational materials must be available before and during the b-learning activity;
- Provide learning complementary resources/support materials in different formats (audio, video, text and images);
- The use of multiple communication tools and multimedia elements should be considered.

REFERENCES

Al-Fraihat, D., Joy, M., Masa'deh, R., & Sinclair, J. (August 2019). Evaluating E-learning Systems Success: An Empirical Study. *Computers in Human Behavior, 102*. doi:10.1016/j.chb.2019.08.004

Barron, J. (2006). Top ten secrets of effective e-learning. *Industrial and Commercial Training, 38(7),* 360–364. doi:10.1108/00197850610704552

Blissitt, A. M. (April 2016). Blended Learning Versus Traditional Lecture in Introductory Nursing Pathophysiology Courses. *Journal of Nursing Education, 55(4)*, 227-230. doi:10.3928/01484834-20160316-09

Du, L., Zhao, L., Xu, T., Wang, Y., Zu, W., Huang, X., . . . Wang, L. (August 2022). Blended learning vs traditional teaching: The potential of a novel teaching strategy in nursing education - a systematic review and meta-analysis. *Nurse Educ Pract, 63:103354*. doi:10.1016/j.nepr.2022.103354.

El-Hawy, L. L., Alssarat, K. A., Dimetry, S. R., & Allah, M. B. (January 2022). Medical Students' Satisfaction Regarding Blended Learning during COVID-19 Pandemic. *The Egyptian Journal of Hospital Medicine, 86*, 645-652.

Gerdprasert, S., Pruksacheva, T., Panijpan, B., & Ruenwongsa, P. (July 2011). An interactive web-based learning unit to facilitate and improve intrapartum nursing care of nursing students. *Nurse Education Today, 31(5)*, 531-535. doi:10.1016/j.nedt.2010.10.008

Ibrahim, J. N., R. A., AlDarmasi, M., Ghamdi, A. A., Gaddourya, M., & AlBar, H. M. (2021). Medical students' acceptance and perceptions of e-learning during the Covid-19 closure time in. *Journal of Infection and Public Health, 14(1)*, 17-23. doi:10.1016/j.jiph.2020.11.007

Isik, O. (2006). E-LEARNING SATISFACTION FACTORS. (U. o. Texas, Ed.) Obtido de https://www.researchgate.net/publication/332120789_Measuring_E-Learners'_Perceptions_of_Service_Quality

Kaur, G., Rehncy, J., Kahal, K. S., Singh, J., Sharma, V., Matreja, P. S., & Grewal, H. (2020). Case-Based Learning as an Effective Tool in Teaching Pharmacology to Undergraduate Medical Students in a Large Group Setting. *Journal of Medical Education and Curricular Development, 7*. doi:10.1177/2382120520920640

le-Roux, I., & Nagel, N. L. (2018). Seeking the best blend for deep learning in a flipped classroom – viewing student perceptions through the Community of Inquiry lens. *International Journal of Educational Technology in Higher Education, 15:16*. doi:10.1186/s41239-018-0098-x

López-Pérez, M. V., Pérez-López, M. C., & Rodríguez-Ariza, L. (April 2011). Blended learning in higher education: Students' perceptions and their relation to outcomes. *Computers & Education, 56(3)*. doi:10.1016/j.compedu.2010.10.023

McLean, S. F. (April 2016). Case-Based Learning and its Application in Medical and Health-Care Fields: A Review of Worldwide Literature. *J Med Educ Curric Dev, 27;3*. doi:10.4137/JMECD.S20377

Söderlund, A., Blazeviciene, A., Elvén, M., Vaskelyte, A., Strods, R., Blese, I., . . . Wiktsröm-Grotell, C. (2023). Exploring the activities and outcomes of digital teaching and learning of practical skills in higher education for the social and health care professions: a scoping review. *Discov Educ, 2*, (2). doi:10.1007/s44217-022-00022-x

Vitoria, L., Mislinawati, M., & Nurmasyitah, N. (2018). Students' perceptions on the implementation of e-learning: Helpful or unhelpful? *Journal of Physics Conference Series, 1088(1):012058*. doi:10.1088/1742-6596/1088/1/012058

Weis, L. (2021). Theoretical approach to e-Learning qauality. *Economics. Ecology. Socium, 5*, 33-45. doi:10.31520/2616-7107/2021.5.1-4

Navigator through forms of study organisation: How to choose an appropriate study design?

Nora Jansone-Ratinika[i], Katrīna Elizabete Puriņa-Biezā, Zane Kadakovska, Jana Jansone, Raimonds Strods

Introduction

The pedagogical approach in DITEPRACT is based on the Bologna process and competency-based learning as defined in the European Qualifications Framework, EQF (European Union). With competence we on a general level understand that a person has the ability to act and solve problems in concrete and specific situations. It is assumed competence is developed through experience. In the ECTS user's guide from 2015 (European Commission, 2017) competence is defined as:

> "the ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development. In the context of the EQF, competence is described in terms of responsibility and autonomy."

In addition to that a competence contains knowledge and skills it also comprises the attitude the person has in the matter. Knowledge comprises what is known and understood. This normally builds on theory and insight in research in the field. Skills relate to ability and actions one can perform. The attitude is in part a personal and social ability, but can also relate to a methodological reasoning in a given discipline. In working life this can give the person motivation, endurance and ability to handle setbacks and change.

We value active and student-centered learning based on the ambition to create meaningful learning for the student. Student-centred learning, as the term suggests, is an approach to learning or teaching that puts the learner, not the teacher at the centre (Attard, 2010). The European Student Union describes student-centred learning as follows:

> "Student-centred learning represents both a mindset and a culture within a given higher education institution and is a learning approach which is broadly related to, and supported by, constructivist theories of learning. It is characterised by innovative methods of teaching which aim to promote learning in communication with teachers and other learners and which take students seriously as active participants in their own learning, fostering transferable skills such as problem-solving, critical thinking and reflective thinking." (Blazhe, Erin, Tijana, 2015).

A student-centered approach put focus on the learning, competence and career development of the student. The student makes the decisions on his or her studies and takes responsibility for the choices made during studies. A learning-oriented approach provides the student with a self-directed, active learning experience and an inclusive and

[i] Riga Stradins University, Latvia, nora.jansone-ratinika@rsu.lv ; all e-mails firstname.lastname@rsu.lv

supportive study environment. We perceive the student as an active, responsible individual and this is something we want to support in each student.

Although there are many different forms of study organisation, each has its own advantages. Choosing the suitable study organisation form for the learning outcomes of the course will help both students to achieve their learning goals more successfully and academic staff to gain a clearer notion of student learning in the course. The choice between different forms of study organisation may depend on:

- the learning outcomes to be achieved - the knowledge, skills and attitudes to be acquired,
- the students' prior knowledge and skills of the respective topic, learning experiences and other learning needs,
- the student's learning and the academic staff's teaching approaches,
- the environment available to support the learning process,
- the technical facilities available for the implementation of the study course.

The study organisation forms may be combined within the same study unit, so the academic staff does not have to choose one format for teaching the whole course. Often, part of a course may be focused on the acquisition of knowledge or theory, which would be more successfully delivered as synchronous online learning, while another part of the course may be delivered as synchronous face-to-face learning, where students need to learn new practical skills. Skills acquisition is one of the most difficult, but often the most important aspect of the learning process, requiring the student to recall the knowledge needed for the situation, to apply it in practice, as well as analyse their own actions in order to improve the performance. Therefore, when planning skills acquisition, it is particularly important to choose appropriate study organisation forms, providing students with a suitable place and space for skills acquisition, sufficient feedback in the learning process, and the opportunity to reflect on what has happened. Considering the use of different study organisation forms when planning the implementation of a study course will serve as an opportunity not only to enrich the learning process, but also to increase its effectiveness.

A short description of the study organisation forms:

Synchronous face-to-face learning – a traditional classroom setting whereby learners are physically present in the classroom together (Thompson, 2009).
Asynchronous face-to-face learning - learning that takes place when an academic staff and students are not present at the same time in a physical or virtual environment (Seoudi, Carter, 2022).
Synchronous online learning - this term describes all forms of live or real time interaction between an academic staff and their students over the internet using computer software designed specifically for this purpose (Alhammadeh, Kairouz, Yuksel, 2022).
Asynchronous online learning - students and academic staff learn course content and interact with one another on their own time, in different locations. Academic staff might provide readings, video lectures, and other assignments as the course content that replaces the real time meetings (Young, 2022).

Hybrid learning - this is the learning model in which some students attend classes in-person while others join the classroom from their home or elsewhere (Kihwele, Ngao, 2022).
Flipped Learning - a pedagogical approach that flips the conventional idea of a classroom where first exposure to course content happens before class time, leaving time in class for gaining deeper understanding of the material with academic staff facilitating learning and peers engaged in problem-solving activities (Onodipe, 2020).
The combination of synchronous and asynchronous, face-to-face and online learning activities in one study course is called **blended learning**. Blended learning helps to meet the learning needs of students more successfully, to adapt to the possibilities of ensuring the learning process, and to achieve the intended learning outcomes in the most effective way. Depending on the length and content of the study course, it would be advisable to choose 2-3 study organisation forms for the implementation of the course.

The checklist of statements about six aspects of the study process
In order to facilitate the selection of the study organisation forms for the study course, we offer a checklist of statements. For each of the six aspects of the study process below, we invite you to select 1-2 statements that you think best describe the study course you are running.

Planning the study process

A. The learning outcomes of the study course are focused on the acquisition or improvement of skills.
B. The improvement of knowledge and skills based on student individual interests and/or needs is essential part of the study course.
C. A large number of students participate in the lectures. The academic staff has the skills to organise active online learning.
D. The academic staff has developed various support materials for students that explain the process of learning the study course: an introductory video, summarised answers to students' frequently asked questions, a detailed explanation of the practical assignments with assessment criteria, instructions for using IT tools and contacts for support, timetable of examinations and consultation times, etc.
E. The academic staff has considerable experience in conducting active learning lectures online (i.e. students participate in a variety of activities during the online session: tests, group work, online discussions, etc.). Ensuring continuity of studies is of great importance to the delivery of the study course, if for any reason the student(s) is/are unable to attend lectures.
F. A variety of study materials are available in the e-learning environment, both with and without interactivity, while at the same time the aim of the study course is to sustain development of the learning community between peers.

Study content and materials

A. A sufficient amount of equipment/study materials and resources/workspace are available for all students to use individually or in groups when learning on site. Student learning activities are supported by academic staff's comments, advice and presentation of theoretical ideas.
B. At the beginning of the study course, the academic staff provides students with the necessary information and study materials so that the students can manage

their learning on their own during the course. Students individually sign up for using specific equipment to learn skills/conduct research that is relevant to them. There is a mutual agreement on the possibility for the student to have individual consultations with the academic staff as needed.

C. Students get to know the study content largely from the academic staff's narrative, but it is supplemented by study materials available online, collaborative online activities and smaller assignments.
D. Students explore the online study materials at their own pace to acquire specific knowledge, according to the lesson plan or following certain thematic issues. Students can decide for themselves when and if they need guidance.
E. Sufficient facilities/study materials and resources/equipment for learning practical skills are not available for the face-to-face delivery of the study course.
F. The main study materials for knowledge acquisition are available online, whereas the equipment needed for skills acquisition or the facilities needed for face-to-face lectures are sufficient for all students.

Learning and teaching

A. Students actively learn by carrying out practical tasks in a real or simulated environment. Students work cooperatively both in groups and by giving feedback to each other during the process. The academic staff can observe students' skills and learning.
B. Students have sufficient knowledge, skills and competences to independently complete the tasks and participate in learning activities. The academic staff provides individual counseling to students if necessary.
C. Students acquire new and complex knowledge in the study course, thus requiring the support and guidance of the academic staff in the process of developing their understanding. Students engage in small online activities guided by the academic staff to keep their attention and follow the presentation of the topic, as well as to provide feedback on their learning. The academic staff offers students opportunities for peer learning using digital solutions.
D. Students have the autonomy and flexibility to acquire or extend their knowledge and skills using digital materials developed by the academic staff or by cooperating with each other online.
E. Students are divided into groups, with some students participating in face-to-face lectures and others participating in online lectures. Both groups can join the lecture at the same time and complete similar learning tasks, or each group can complete learning tasks that are more appropriate to their form of study. It is important to ensure communication between the two groups.
F. Students come to face-to-face lectures prepared and have independently acquired the primary knowledge. Any content that has been learned independently is later discussed in a face-to-face lecture in order to reach a common understanding of the key concepts. It is important for the academic staff to think how to follow the individual learning process of the students.

Acquisition of professional knowledge/skills

A. A safe environment and the learning of job-specific practical skills under the guidance of academic staff are important.
B. Each student makes their own decisions about the ways and opportunities to acquire the essential knowledge/skills. Thus, on the one hand, the academic staff is

less able to monitor the students' learning progress, on the other hand, the students are able to focus more on the knowledge and skills that are relevant to them.

C. The focus is mostly on the acquisition of knowledge, but the academic staff can also give demonstrations that explain the application of certain skills.
D. Students acquire knowledge independently using interactive learning materials such as interactive presentations, tests, digital simulations.
E. Students can learn the skills they need for the job in smaller face-to-face groups, with individual support and feedback from the academic staff.
F. Students learn practical skills in the presence of the academic staff, learning the theory relevant to the application of the skills independently before the lecture.

Transversal Competences

A. Students develop social and emotional skills, critical thinking and the ability to find innovative solutions to different problem situations. The sense of community and team-building skills are sharpened; and the opportunity for formal and informal cooperation is provided.
B. Students improve future skills - to solve problems in a self-directed way, to make decisions and to act successfully in new contexts. They are self-disciplined and motivated to learn.
C. Students develop digital skills, including presentation skills, through active online learning opportunities provided by the academic staff.
D. Self-directed learning skills and digital skills are improved and developed.
E. Digital, as well as communication and cooperation skills, are promoted and developed both in online and face-to-face environments.
F. During the learning process, students actively develop their cognitive skills through the selection, comprehension, analysis, interpretation, and communication of information.

Assessment

A. During the lectures, the academic staff gives immediate feedback on each student's learning, demonstrated skills and knowledge. During the final examinations, the academic staff has the opportunity to monitor academic integrity.
B. Students may use all the resources available at the university to complete the assignment of the final examination, while the assessment and feedback from the academic staff is given only on the result of the completed task.
C. Students share what they have achieved during the course in the form of presentations. The end-of-course examination is conducted online using appropriate software to help ensure academic integrity.
D. During the learning process, students analyse their learning independently to understand what has worked and what still needs to be learned. During the learning process, feedback is provided on independent learning tasks either automatically after completing the task online or manually from the academic staff or other students. At a time that suits them, students take an online examination, which includes open-ended questions and creative tasks, in which students can use different solution paths according to their level of knowledge and skills.
E. Students participate in a variety of evaluation assignments during the study course - assessment of practical skills can be successfully carried out during face-to-face activities and knowledge can be tested during remote sessions. At the end of the

course, it is possible to evaluate student achievements using a variety of assessment data, complemented by student reflection about the learning process.

F. Students will need continuous feedback on their own learning, which may take the form of self-assessment tests or simulation scenarios. At the end of the study course, students demonstrate the knowledge they have acquired by working on a problem solution or project, or by reflecting on their learning.

Results: choice of the preferred study organisation form

In the table below, add up your chosen letters through the six aspects of the organisation of the learning process. The two to three most frequent statements are the study organisation forms that you should consider for your course.

Letter chosen	**A**	**B**	**C**	**D**	**E**	**F**
Number of responses						
Meaning: Preferred study organisation form	Synchronous face-to-face learning	Asynchronous face-to-face learning	Synchronous online learning	Asynchronous online learning	Hybrid learning	Flipped learning

Tips to consider when implementing the study organisation forms that are most relevant to you:

Synchronous face-to-face learning

A study process that takes place in a physical learning environment, with all students being together in it, so the size of the room, accessibility, mobility of the seating arrangements, and the equipment available in the room affect the learning process. It is recommended that the academic staff chooses synchronous face-to-face learning if active learning is intended, as the passive information exchange is not the primary goal and strength of this study form. Purposefully organised synchronous face-to-face learning is an excellent opportunity to create a safe environment for students to learn skills under the guidance of the academic staff, where the academic staff can give immediate feedback on the mastery of the skill. The academic staff has the opportunity to focus students' attention on the most relevant aspects of the topic, support students during the performance of tasks, and provide advice and suggestions for improving knowledge and skills. However, the use of digital solutions can also play an important role in synchronous face-to-face learning, e.g. simulations and augmented reality solutions can be useful for learning skills, whereas short tests and surveys that students complete on their smart devices at the end of the lecture can facilitate the academic staff's work in collecting and analysing feedback. In order to ensure that all students have the opportunity to be active participants in a face-to-face lecture, the academic staff's preparation before the lecture is important (creating a lesson plan, preparing materials, choosing active learning methods, planning the use of technology), so that the time spent face-to-face is as valuable as possible for all students. It should also be ensured that all students have access to equipment/learning materials

and workspace to be used individually or in groups in order to carry out the planned activities.

A sense of community and the opportunity for formal and informal cooperation will be most successfully created during synchronous face-to-face learning, thereby improving students' social and emotional skills. In this study organisation form, it is important to consider how the different learning needs of students can be met if everyone works together in the same room, and how students will be able to participate in the further learning process if they miss a lecture.

Asynchronous face-to-face learning
Organisation of the learning process where each student independently acquires the knowledge and skills, he/she needs or is interested in, using equipment and resources available on-site. This study organisation form is predominated by students' own deliberate activity, which supports self-directed learning. Students develop the ability to plan and manage their own learning and evaluate their performance in order to be more effective in the future. The study course is carefully thought out and guided by the academic staff so that students are able to take responsibility for their learning without reminders from the academic staff. The academic staff provides activities that allow students to engage in complex thought and behavioural processes, for example, ensuring theoretical information and exchange of ideas about the subject matter using various IT solutions (discussion forums, educational games, demonstrations), and establishing possibilities to acquire practical skills using specific technologies, simulation mannequins, equipment, laboratories, incubator resources and other tools that would support job-specific skill attainment. The role of the academic staff is more supportive, less dominating and influencing. Students are prepared to respond actively to the academic staff's pre-prepared guidance and instructions. The academic staff can offer different forms of assessment according to the learning aim and the learning outcomes to be achieved. For example, portfolios can be created in which assignments that are assessed on an ongoing basis are collected and serve as a basis for the final evaluation. Self-assessment can also be used by implementing self-assessment tools (tests), highlighting the use of reflection when students discuss and evaluate their learning results. Similarly, peer assessment can be implemented where students assess the work of their fellow students and give feedback on their work in order to plan and direct future learning. It should be emphasised that each of the above-mentioned assessment forms is based on predefined evaluation criteria that can improve students' critical thinking skills and develop their autonomy in a learning-teaching process. (Farmer, 2020; Wang, Woo, 2007; Northey, Bucic, Chylinski, Govind, 2015; Jansone-Ratinika, Koka, Koķe, Brants, Strods, 2021).

Synchronous online learning
Organisation of the learning-teaching process in an online learning environment, with all students logging on to the lecture at the same time. Synchronous online learning allows one to actualise and agree upon the main theoretical concepts in the study course, as well as set the requirements for the completion of the study course at the beginning of the course. The academic staff can give simple skills demonstrations using online videos and/or his/her own web camera. Still, it should be taken into account that not all students may have access to fast internet, which may hinder sound and image broadcasting. Similarly, synchronous online lectures can be successfully recorded and made available for students to watch throughout the entire study course. However, the academic staff's skills

in organising active learning in an online environment are essential for the organisation of a synchronous online learning process, in order to facilitate student engagement and help to maintain attention to the content actualized in the course. In an online environment, it is easy to organise small group work where students can discuss an aspect of a topic and then share their findings with the whole group, or work in pairs to complete a task, submitting their answers to the academic staff. Students can also share their independent coursework with others, engage in discussions and participate in many other activities during the lecture. Nevertheless, the academic staff's preparation for formulating specific learning tasks and delegating responsibilities will be essential for successful learning.

Synchronous online delivery offers a great deal of flexibility in terms of the number of students who can be present and the location from which the academic staff and students can connect to the lecture, but it limits the opportunities for interaction and socialising. The academic staff, therefore, needs to think in particular about how to actively engage students by adding short activities every 15-20 minutes that invite students to reflect on their prior knowledge, answer interactive questions, share ideas in groups or complete small online tasks individually. (Händel, et.al., 2022; McArthur, 2022).

Asynchronous online learning

A study organisation form that allows students to access study content without time and space constraints. Learning takes place in online learning environments. Students can set their own pace of study, using a pre-prepared thematic plan and sticking to set milestones. Students can decide when and if they need tutorials or other support mechanisms such as additional materials or technical support. The division of responsibilities between the academic staff and the students is established, therefore it is important for the academic staff to support the students so that everyone achieves the set learning goal. The final evaluation is relatively less important in the assessment process, prioritizing regular smaller tests, quizzes, and independent work. This leads to systematic work and removes tension from students to succeed at the end of the course. Peer assessment is a possible form of assessment, which involves evaluating the work of group members using IT tools: *Moodle Forum, Workshop, Peer Mark (Peer-Mark (Turnitin)), iPeer*, etc. During the activity, students complete a learning task and students analyse each other's work, according to a pre-defined evaluation rubric. The assessment can be in the form of marks or descriptive suggestions. As a result, both the academic staff and the students get information that is essentially equivalent to feedback. It can contribute to students' understanding of what they know or do not know, and what they need to work on to improve their performance, and the academic staff can make changes to the content of the study course and adjustments to lesson plans based on students' performance. Digital simulation scenarios, in which students independently actualize the acquired knowledge in job-specific contexts, are useful for learning skills during asynchronous online activities. However, the practical application of the skills in most of the study courses should be implemented face-to-face. (Guertin, 2018; Hiltz & Goldman, 2005).

Hybrid learning

Hybrid learning is a study organisation form in which some students study face-to-face and some remotely. For example, a lecture, in which the academic staff works with students in a face-to-face setting, while some students participate in the activities of the lecture via video conferencing. This study organisation form became particularly popular

during the Covid-19 pandemic as it ensures the continuity of the study process if for some reason the student(s) cannot attend the lecture in person.
Hybrid learning provides a flexible learning process and equal access to education for all students. If there is a lack of space or material resources in a study course, larger groups of students can be divided into smaller groups and lectures can be attended alternately face-to-face and remotely. In this way, all students are given the opportunity to engage in practical activities using the resources and equipment available on-site. Hybrid learning supports the development of self-directed learning and digital skills, especially for students who access lectures remotely and learn without the presence of academic staff. Enriching face-to-face learning opportunities with educational technologies can enhance students' interest and motivation to learn.

However, this study organisation form also comes with its own challenges. Equal involvement of students is the biggest challenge in hybrid learning. The role of the academic staff is to facilitate interaction between face-to-face students and those joining the lecture remotely. It should also be considered that the learning materials developed in the course should be equally usable both in physical and digital form. Some thought and warning should be given to students (especially online) about how they will be able to communicate with the academic staff and fellow students during the lecture, and how questions will be asked. Therefore, the students should be informed well in advance about the IT tools that will be used during lectures. It is important that the academic staff chooses appropriate technical solutions for the lecture and feels confident in using them. (Priess-Buchheit, 2020; Raes, Detienne, Windey, Depaepe, 2019).

Flipped Learning
Flipped learning is a study organisation form where students learn the study content individually before the lecture, while during the lectures, the academic staff uses active learning methods to actualize and reinforce the individually learned ideas. Students independently learn the foundations of the topic and in face-to-face lectures engage in-depth learning through discussions and practical tasks.
Independent work of students before the lecture plays an important role in the organisation of flipped learning. The quality of the lecture depends on whether students have prepared thoroughly for the activity, so the academic staff should think of ways to monitor and support students' preparation. This is a very flexible study organisation form as students can prepare for the lecture at a time, place, and pace that suits them, thus developing self-directed learning skills. Whereas it requires more initial input from the academic staff in terms of developing clear materials for students to learn from before the lesson, supplemented by active learning tasks that facilitate students' immersion in the content and self-analysis of their own learning.

During flipped learning, the academic staff plays the role of advisor and mentor, guiding students' learning rather than presenting the theory. This means that the academic staff has less of a role in explaining general concepts, therefore students need some background knowledge or context to acquire new knowledge in a qualitative way. This provides opportunities for discussion between students, where they can analyse how each of them has understood the theory they have learned independently. In addition, during independent learning, students can acquire theoretical or procedural knowledge for performing certain practical manipulations, preparing for the practical tasks to be performed in face-to-face sessions, or for the acquisition of certain skills. One of the challenges in implementing

flipped learning could be the lack of discipline for students to prepare for each lecture. This challenge can be overcome by slowly familiarising both students and academic staff with the new study organisation form. For example, instead of flipping the whole course at once, it may be useful to start small, gradually building up students' confidence to do the flipped assignments to prepare for the bigger changes.
In order to implement flipped learning, students also need technical support, which is not always available for everyone. To ensure that the lack of technology does not create a gap in learning, the academic staff can provide backup options for students who do not have access to a computer or an internet connection, for example by providing learning spaces at the university with access to computers and wireless internet and other ways of accessing materials, such as USB sticks. (Bredow, Roehling, Knorp, Sweet, 2021; Lee, Choi, 2019).

REFERENCES

Alhammadeh Al Issa, H., Kairouz, H., & Yuksel, D. (2022). EFL Teachers' Challenges and Coping Strategies in Emergency Remote Teaching During the COVID-19 Pandemic. In W. El-Henawy, & M. del Mar Suárez (Ed.), *English as a Foreign Language in a New-Found Post-Pandemic World* (pp. 93-116). IGI Global. https://doi.org/10.4018/978-1-6684-4205-0.ch005

Attard, A. (2010). Student Centered Learning. An Insight Into Theory And Practice. https://www.esu-online.org/wp-content/uploads/2016/07/2010-T4SCL-Stakeholders-Forum-Leuven-An-Insight-Into-Theory-And-Practice.pdf

Blazhe, T., Erin, N., Tijana, I. (2015). Overview on Student-Centered Learning in Higher Education in Europe: Research Study. https://eric.ed.gov/?q=source%3A%22European+Students%27+Union%22&id=ED572762

Bredow, C. A., Roehling, P. V., Knorp, A. J., & Sweet, A. M. (2021). To Flip or Not to Flip? A Meta-Analysis of the Efficacy of Flipped Learning in Higher Education. *Review of Educational Research, 91*(6), 878–918.

European Commission, Publications Office (2017). Directorate-General for Education, Youth, Sport and Culture, *ECTS users' guide 2015* https://data.europa.eu/doi/10.2766/87192

European Union (n.d.). The European Qualifications Framework (EQF). https://europa.eu/europass/en/europass-tools/european-qualifications-framework

Farmer, H. (2020). 6 Models for Blended Synchronous and Asynchronous Online Course Delivery. https://er.educause.edu/blogs/2020/8/6-models-for-blended-synchronous-and-asynchronous-online-course-delivery

Guertin, L. (2018). Teaching Guide: Using Student Peer Review [Educational]. Retrieved from https://writing.colostate.edu Peer Review. Science Education Resource Centre. https://serc.carleton.edu/sp/library/peerreview/index.html

Händel, M., Bedenlier, S., Kopp, B., Gläser-Zikuda, M., Kammerl, R., & Ziegler, A. (2022). The Webcam and Student Engagement in Synchronous Online Learning: Visually or Verbally? *Education and Information Technologies, 27*(7), 10405–10428.

Hiltz, S.R., Goldman, R. (2005). Learning together online: Research on asynchronous learning networks. https://www.academia.edu/604970/Learning_together_online_Research_on_asynchronous_learning_networks.pdf

Kihwele, J. E., & Ngao, A. I. (2022). Pedagogical Adaptation in Higher Learning Institutions During the COVID-19 Pandemic in Tanzania. In M. Malik, B. Akkaya, & D. Harper (Eds.), *Comparative Research on Educational Policy Responses to the COVID-19 Pandemic: Eastern vs. Western Perspectives* (p. 38-67). IGI Global. https://doi.org/10.4018/978-1-6684-3600-4.ch003

Jansone-Ratinika, N., Koka, R., Koķe, T., Brants, M., Strods, R. (2021). Learning and Teaching During Covid-19: Survey Findings. In L. Daniela & A. Visvizi (Eds.), *Remote Learning in Times of Pandemic. Issues, Implications and Best Practice* (p. 164-180). Routledge. ISBN 9780367765705

Lee, J., & Choi, H. (2019). Rethinking the flipped learning pre-class: Its influence on the success of flipped learning and related factors. *British Journal of Educational Technology*, *50*(2), 934–945. https://doi.org/10.1111/bjet.12618

McArthur, J. A. (2022). From Classroom to Zoom Room: Exploring Instructor Modifications of Visual Nonverbal Behaviors in Synchronous Online Classrooms. *Communication Teacher, 36(*3), 204–215.

Northey, G., Bucic, T., Chylinski, M., Govind, R. (2015). Increasing Student Engagement Using Asynchronous Learning. *Journal of Marketing Education, 37* (3). https://doi.org/10.1177/027347531558

Onodipe, G. O. (2020). Differentiation to Accommodate Diverse Learners in the Flipped Classroom. In J. Keengwe (Ed.), *Handbook of Research on Diversity and Social Justice in Higher Education* (p. 292-307). IGI Global. https://doi.org/10.4018/978-1-7998-5268-1.ch017

Priess-Buchheit, J. (2020). Synchronous hybrid learning in times of social distancing. A report and case study on benefits, trainer's challenges, and guidelines. International *Journal for Innovation Education and Research, 8*(10), 356-364. https://doi.org/10.31686/ijier.vol8.iss10.2689

Raes, A., Detienne, L., Windey, I., Depaepe, F. (2019). A systematic literature review on Synchronous Hybrid Learning: Gaps identified. *Learning Environments Research, 23*(3), 269– https://doi.org/10.1007/s10984-019-09303-z

Seoudi, S., & Carter, A. (2022). Strengths and Challenges of Digital Tools in EAP Remote Learning Settings. In P. Sullivan, B. Sullivan, & J. Lantz (Eds.), *Cases on Innovative and Successful Uses of Digital Resources for Online Learning* (p. 130-150). IGI Global. https://doi.org/10.4018/978-1-7998-9004-1.ch006

Thompson, C. J. (2009). Online Learning Teams. In P. Rogers, G. Berg, J. Boettcher, C. Howard, L. Justice, & K. Schenk (Eds.), *Encyclopedia of Distance Learning, Second Edition* (p. 1519-1524). IGI Global. https://doi.org/10.4018/978-1-60566-198-8.ch221

Wang, Q., Woo, H. L. (2007). Comparing asynchronous online discussions and face-to-face discussions in a classroom setting. *British Journal of EducationTechnolody, 38* (2), 272-286. https://doi.org/10.1111/j.1467-8535.2006.00621.x

Young, A. H. (2022). From the Classroom to the Breakout Room: The Many Embedded Ways a Librarian Can Teach Information Literacy. In P. Sullivan, B. Sullivan, & J. Lantz (Eds.), *Cases on Innovative and Successful Uses of Digital Resources for Online Learning* (p. 302-315). IGI Global. https://doi.org/10.4018/978-1-7998-9004-1.ch014

EDITORS:

Dr. Paed. **Nora Jansone-Ratinika** is an Associate professor, and the director of the Centre for the Educational growth of Rīga Stradiņš University. Nora Jansone – Ratinika is the senior leader of many study process innovation projects, she participates in institutional and inter-university initiatives to improve higher education. The associate professor is active in research and international cooperation, supervising and participating in six local and international research projects during the last three years. Nora Jansone – Ratinika engages in continuing education for academic staff and the study process as a teacher and consultant.
Areas of expertise in research and pedagogical work: study process innovations, learning and teaching strategies, technology-enhanced blended learning and teaching, quality analysis and assurance, and continuing education for academic staff.
(Orcid: 0000-0003-1976-6914)

Jukka Surakka holds a PhD in exercise medicine. He has been working at Arcada UAS as head of research in health & wellbeing for 16 years, today as an affiliated researcher. Research areas: health sciences, health promotion, occupational health, social and intellectual capital. Published over 40 scientific articles and books, and acts as a reviewer for scientific journals. He has coordinated several international and national RDI (Research, Development, Innovation) projects.

PhD **Health Sciences Camilla Wikström-Grotell** is a physiotherapist (PT) with a specialist PT degree in neurological physiotherapy and a healthcare teacher with a master and doctorate degree in health sciences. She has served as a PT teacher and leader of rehabilitation and health care education for more than 30 years. Between the years 2005 and 2018 she was head of the Department of Health and Welfare, and in addition from 2012 vice-rector with responsibility for educational development at Arcada. In 2019, she was appointed director of academic leadership with a special focus on collaboration in the Nordics. Since 2022, she acts as vice dean for Graduate school and research. She is also an affiliated researcher at Mälardalen University.
She is active in several national and international research projects, acts as an international evaluator of education and as an expert reviewer in several international journals. Her publications deal with health promotion, issues related to movement and health, evidence-based practice, sustainability issues and higher education pedagogy.
(Orcid: 0000-0003-2312-3612)

AUTHORS in order of appearance

Anne Söderlund, PhD, is a professor in Physiotherapy with behavioral medicine profile at School of Health, Care and Welfare, Mälardalen University, Västerås, Sweden. She is also affiliated professor at Arcada University of Applied Sciences in Helsinki, Finland. She is a leader of a multidisciplinary group, BeMe-Health, of 20 researchers. Her research area is on prevention, treatment, and evaluation of health problems from a behavioral medicine perspective in the physiotherapy framework. Her research is focused on the individual's behavior and ability for functioning in everyday life in different ages. She has more than 100 published scientific articles. She is member of the European Pain Federation Academy Board. She is also an Editor-in-Chief for the European Journal of Physiotherapy.
(Orcid: 0000-0002-4537-030X)

Dr. **Halil Ersoy**
He is an assistant professor doctor in Computer Education & Instructional Technology department at Başkent University, in Turkey. In addition to faculty membership, he is a vice chair of two research centers: Distance Education Application and Research Center, and Teaching and Learning Center. His study areas are distance education, learning management systems, digital literacy and digital content development. He has been giving computer literacy, web design, programing and web application development courses at undergraduate and graduate levels.
(Orcid: 0000-0003-1598-7656)

Sultan Kav
Professor at Baskent University, Faculty of Health Sciences Department of Nursing in Ankara, Turkey. She is Erasmus Coordinator of the Faculty of Health Sciences. She received her Bachelor of Nursing, Master and PhD degrees from Hacettepe University School of Nursing in Ankara, Turkey. She has held a range of nursing positions, including clinical nurse, nurse supervisor, oncology nurse educator and research coordinator. She has over 25 years' experiences in oncology nursing; is an active member of national and international organizations, served on the Professional International Organisation's Board. She has coordinated and involved several international projects including EU and World Bank. She has published many scientific articles on cancer nursing, health promotion, elderly care, supportive and palliative care.
(Orcid: 0000-0003-0361-7498)

Cigdem Baskici

Cigdem Baskici is associate professor in the Department of Healthcare Management at Başkent University, in Turkey. Her study areas are international business, strategic management and network theory. She worked as a researcher in European Union and World Bank projects, and took part in projects carried out in cooperation with university-public institutions. She has been giving organizational behavior, management and entrepreneurship courses at undergraduate and graduate level.
(Orcid: 0000-0003-0712-1481)

Prof. **António Manuel M L Fernandes**

Born in Guarda, Portugal, Nursing School of Coimbra´ Professor, RN, PhD, Post-graduate degree in Health Education and training in e-Learning and Digital learning Technologies. Is coordinator of the Training and Incorporation Program for Digital Technologies and ICT in Theoretical, Practical and Clinical Education (P7). It axis 1 "Education and Training" of the Strategic Development Plan 2020-2024 of Nursing School of Coimbra. Several years' experience in the application of project and problem based learning in the e-learning and hybrid modality in Master and Post-graduate degree curricular units. In addition, is researcher of Health Sciences Research Unit: Nursing (UICISA: E) and member of core staff of Portugal Center for Evidence-Based Practice: Joanna Briggs Institute Center of Excellence (Trainer – Evidence Implementation Training Program). Main areas of interest: Patient Safety, Risk Management, Occupational Health, Evidence Implementation, and Evidence-based practice.
(Orcid: 0000-0003-0712-5968)

MScN **Hugo Leiria Neves**

Hugo Neves is a nurse with a specialization in rehabilitation nursing and a nursing teacher with a master's degree in Nursing. Having worked in a neurology ward for 14 years, he has been in pedagogical practice since 2017, educating future nurse professionals and specialists.
He is active in several national and international research projects. He has published in multiple journals in rehabilitation nursing, nursing informatics, evidence-based practice, elder care, and pedagogy in higher education. He participates as a reviewer and associated editor in several international journals.
(Orcid: 0000-0002-6843-6228)

Daniela Filipa Batista Cardoso

Researcher in Health Sciences Research Unit: Nursing of the Nursing School of Coimbra. She completed her graduation in Nursing (2011) at the Nursing School of Coimbra and her Ph.D. in Health Sciences – Nursing (2020) at the Faculty of Medicine of the University of Coimbra. She is core staff of the Portugal Centre for Evidence-Based Practice: a JBI Centre of Excellence and a JBI Accredited trainer of the JBI-Evidence Implementation Training Program and JBI-Comprehensive Systematic Review Training Program. She has been involved in funded and non-funded research projects in the area of nursing education, evidence-based practice, evidence implementation and evidence synthesis. She is author and co-author of several papers and received 3 awards/ Distinctions.
(Orcid: 0000-0002-1425-885X)

Prof. **Veronica Rita Dias Coutinho**

Born in Caldas da Rainha, Portugal, Nursing School of Coimbra Professor, PhD, expertise in Nursing Education by Simulation & Emergency/Disaster Response. Verónica Coutinho is a teacher/researcher at Nursing School of Coimbra. Currently she is Quality Coordinator. Postgraduate in emergency nursing and specialist in medical-surgical nursing. Coordinator of the structuring project entitled "Simulation in Nursing Education" at the Nursing Science Research Unit (UICISA:E). Applies the simulation of clinical practice using reflective criticism in the evaluation of it.
Main areas of interest: critical illness, emergencies, simulation, debriefing and evidence-based practice.
(Orcid: 0000-0001-8073-4562)

Mg. Paed. **Raimonds Strods** is a Study innovation manager in the Centre for the Educational growth of Rīga Stradiņš University. Raimonds Strods is head of the Rīga Stradiņš University School of Junior Academics. On a daily basis supports academic staff in strengthening their pedagogical competence, advises academic staff in the modernisation of study courses and in developing new innovative study courses. Raimonds Strods is PhD student of pedagogy at University of Latvia. He has participated in three local and international research projects during the last three years.
Areas of expertise in research and pedagogical work: study process innovations, digitalisation of higher education, learning and teaching strategies, and continuing education for academic staff.
(Orcid: 0000-0002-4086-9283)

Mg. Paed. **Jana Jansone** is Study project manager in the Centre for the Educational growth of Rīga Stradiņš University. Jana Jansone is the junior project manager, she participates in higher education activities and university initiatives to improve learning and teaching process. Jana implements a planned and proactive approach to develop support materials for academic staff. She collaborates on innovate education materials or task and sharing messages with team members to generate new ideas in higher education.
Areas of expertise in research and pedagogical work: study process innovations, learning and teaching strategies, and continuing education for academic staff.

Zane Kadakovska is a teaching and learning project manager at the Centre for the Educational growth of Rīga Stradiņš University. Everyday work at Rīga Stradiņš University consists of providing consultative support to the academic staff on the use of various IT tools in the study process as well as creating informative and didactic materials on different technical and pedagogical topics in a form of video and graphics. Zane Kadakovska engages in continuing education by leading video production workshops for academic staff.
Areas of expertise in research and pedagogical work: production of audio-visual study materials, hybrid teaching, study process innovations, digitalisation of higher education.

Katrina Elizabete has a master's degree in Educational Sciences. She continues her studies in a doctoral program, researching digital technology's role in education and its historical development in Latvia. Katrina is currently working at Rīga Stradiņš University as a Study innovation project manager. Her research interests are teacher pedagogical digital competence, digitalization processes in education, and digital technology's role in the educational process's - historical development and future roles. Katrina has experience participating in European-level and national-level projects on topics such as robotics in preschool education and inclusivity in education and society. She has experience planning, developing, and leading further education classes with higher education staff and school teachers.
(Orcid: 0000-0003-4982-891X)

ANNEXES

ANNEX 1. SCENARIO TEMPLATE: Generic script / DETAILS AND GUIDELINES (Generic script to plan)

SCENARIO TEMPLATE; Generic script

Steps	Title
1st Scenario	-Target Audience, including, if necessary, some pre-requisites -Rational/Justification (*weigh the option of blind to students*) -Objectives *(weigh the option of blind to students)* -Skills to achieve *(weigh the option of blind to students)* -Problem Situation *(ponder if partially blind to students).*
2nd Scenario on-line Setup	-Online Learning modality and itinerary: -VLE (virtual learning environment) or LMS (learning management system) -Technological and digital support, multiple communication tools and multimedia elements: -Digital resources digital content is immediately understandable to a human user, including -Characterization of the environment/clinical context and simulated patient - Documentation of clinical record
3rd Scenario development Pre-scenario	-Pre-implementation about online environment navigation about the clinical situation/learning subject
Scenario (phase 1)	-Data/Information the students find at the start of the scenario
Scenario (phase 2)	*-Data to be searched (weigh the option of blind to students)* *-Scenario sequence and Expected actions (weigh the option of blind to students)*
Scenario (phase 3)	*-Learning outcomes and Notes for the debriefing*
Debriefing	(Ponder, if face-to-face or online; synchronous or asynchronous; individual or collective.) *Some intervention suggestions* Facilitator/Teacher: Students:
Teacher's notes	*If necessary*

SCENARIO TEMPLATE DETAILS AND GUIDELINES: Generic scrip to plan

Steps	**Title**
1st Scenario	**Target Audience, including, if necessary, some pre-requisites** Disciplinary Area; Level of education: year of attendance: **Rational/Justification** (weigh the option of blind to students) Provide the rationale for the Scenario. Clarify the concepts and area of the scenario. **Objectives** *(weigh the option of blind to students)* General objective; Specific Objectives: 1.1 ; 1.2 ; 1.3 ; … **Skills to achieve** *(weigh the option of blind to students)* Direct Response to Objectives. Provide information about what skills should be acquired with the scenario (for example critical thinking & clinical decision-making, soft skills, hands-on skills, and knowledge) Objective 1.1 …; Objective 1.2 …; Objective 1.3…; … **Problem Situation** Consider what information should be only available to the trainer and what information should be provided to the students.; The information to be provided to the students should be considered in the subsection "**Data the students find at the start of the scenario**"
2nd Scenario on-line Setup	**Online Learning modality:** Type: b-learning (blended learning) or h-learning (hybrid-learning) ore-learning (online synchronous and asynchronous or other. A specific implementation of blended learning/online learning: Itinerary **VLE (virtual learning environment) or LMS (learning management system)** Please specify the VLE (virtual learning environment) and/or LMS (learning management system) that you will use in your proposed scenario (for example, Moodle, Canvas, Blackboard, or own platform …) **Technological and digital support, multiple communication tools and multimedia elements:** videos displaying clinical steps; combined video-based visual and audio guidance; virtual simulator app; asynchronous online session; web-conference; e-mail; chat etc.…) (Google drive; PowerPoint; Prezi; Padlet; Problem; Screencastify; Mentimeter; Socrative; Quizlet; Google forms; … **Digital resources digital content is immediately understandable to a human user, including** support manuals developed by the teacher (eg: e-books, study guides, and articles images); interactive digital simulator; avatars; presentations; relevant images and graphics videos, audios, bullet points, and reflection questions; tutorials; discussion forums; Quiz; wiki; other interactive learning objects and simulations.…) **Characterization of the environment/clinical context and simulated patient** **Documentation clinical record** Standard documentation available to the student during the scenario

3rd Scenario development Pre-scenario	**Pre-implementation** **about online environment navigation** information guide written or tutorials on how to use applications and software required for the development of the proposed activities); **about clinical situation/ learning subject** Provide generic learning objectives. The objectives should not specify what is expected from students in the scenario. Describe in simple words the circumstances in which the problem/situation occurs (for example, the clinical condition of the patient, clinical context, …). Describe and characterize the setting where the scene takes place (ward, on the street, in a school, etc.), with or without characterization of the space. Clinical history (if applicable) - we should consider if the student should have access to the full clinical history or if the student should have access only to part of the history or should consult the clinical process.
Scenario (phase 1)	**Data the students find at the start of the scenario:** Context, problem situation, momentary patient clinical/emotional condition, time of day, etc (Directly observable)
Scenario (phase 2)	***Data to be searched*** *(weigh the option of blind to students)* *Depends on the subject and learning objectives that the student is expected to infer or deduce. The challenge = correct pathway.* ***Scenario sequence and expected actions*** *(weigh the option of blind to students)* *Depends on the subject and learning objectives.*
Scenario (phase 3)	***Learning outcomes and Notes for the debriefing*** *Performance appraisal and learning outcomes that allow debriefing systematizing*
Debriefing	**(Ponder, if face-to-face or online; synchronous or asynchronous; individual or collective)** How the participants felt and what they accomplished/witnessed; Positive aspects with reinforcement; Aspects to improve; Final synthesis *Some intervention suggestions* Facilitator/Teacher: From the beginning, they only address positive aspects, positive reinforcement that they have done a lot of things well. Then question what students would do differently. Direct ask students to make an overview of what was the scenario. Summarize the main points to retain according to the objectives. Student: How did they feel? What did they witness? What would they do differently for the better? If adequate (depending on methodology) peer comments.

Teacher's notes	*If necessary*

ANNEX 2 a SCENARIO TEMPLATE (Script) PROVIDED BY ARCADA UNIVERSITY OF APPLIED SCIENCES

Steps	**Title**
Scenario	**PATIENT TRANSFER AND ERGOMOMICS**
	Target Audience, including if necessary, some pre-requisites
	-Scientific area: nursing and rehabilitation -Level of education: primary -Year of attendance: first and second year (depending on program)
	Rational/Justification (blind to students)
	Safe patient handling and mobilisation is important in all health-related professions. Nowadays early and frequent mobilisation of patients is common practice, and this can add to the physical demands on patient care workers increasing their risk of injury. This scenario was created as an attempt to prevent work-related musculoskeletal disorders and injuries amongst our students.
	Objectives (blind to students)
	General objective: Safe patient handling and mobilisation Specific Objective: 1.1 Basic knowledge of constructive communication and a person-centered approach within the framework of transfers. 1.2 Basic knowledge of ergonomics for transfers where patient and staff safety are in focus 1.3 Basic knowledge of transfer technology
	Skills to achieve (blind to students)
	After participating in this scenario the student is able to: Objective 1.1 - Use of patient centered communication and approach Objective 1.2- Move a person within his/her own living environment and / or care environment by using proper techniques Objective 1.3 - Identify risk factors due to patient transfer and ergonomics before, during and after the actual transfer
	Problem Situation
On-line Scenario Setup	**Online Learning model**
	E-learning by using Flipped classroom and Blended learning
	VLE (virtual learning environment) or LMS (learning management system)
	Itslearning (learning plattform), Zoom, Youtube

	Technological and Digital support, multiple communication tools and multimedia elements
	videos displaying clinical steps; combined video-based visual and audio guidance; asynchronous/synchronous online sessions; Web-conference; e-mail; chat; PowerPoint; Lime Survey
	Digital resources
	Presentations; relevant images and graphics videos, bullet points, and reflection questions; tutorials; Quiz; peer-simulation based on case-person
	Characterization of the environment/clinical context and simulated patient
	Pentti: elderly male 84 years old, hemiplegia du to stroke in 2015, no afasia, dysfasia, no underlying medical conditions, no medication. Penttis characteristics: 182cm, 89kg. Difficulties walking, uses a stroller. Frequent smoker Environment: A home environment, livingroom next to balcony door and his favourite chair. Pipsa 17 years old, spasticity due to cerebral palsy affecting only motor skills. Pipsas characteristics: 170cm 55kg Environment: pool area/public pool. Other people around looking. Slippery floor. Only bathing suit on.
	Documentation clinical record
	Patient history available to the student always, on the learning platform. No clinical record available for the students to make clinical notes
On –line Pre-scenario	**Initial information for the student**
	About online environment navigation **About clinical situation/ learning subject** Pentti is a 84 years old home-dwelling male who enjoys watching television. Home care nurse visits twice a day and assist with personal hygiene and nutrition. Due to his smoking habits Pentti goes outdoors frequently. His apartment has a balcony with a high doorstep. Coming in from smoking he stumbled on the doorstep and fell. As his home care nurse, you find him next to his favourite chair and stroller, he has been laying there for several hours with the door open. Pipsa is a 17-year-old girl within her rehabilitation period. She is training in the pool once a week for 45minutes. Now Pipsa has gotten out from the water and was on her way to the sauna. The air felt very cold so she tried to hurry unfortunately the floor was slippery and she slipped and fell over. Now she is laying on the floor in pain and can´t get up by herself, dressed in only her bathingsuit and people standing around not knowing what to do.

Scenario (phase 1)	**Data the students find at the start of the scenario**
	Pentti: you find him next to his favourite chair and stroller, he has been laying there for several hours with the balcony door open. Pipsa: is laying on the floor in pain and can´t get up by herself, dressed in only her bathingsuit and people standing around not knowing what to do.
Scenario (phase 2)	**Data to be** searched (blind to students)
	Depends on the subject and learning objectives. (that the student is expected to infer or deduce. The challenge correct pathway) Patients' basic problems. Challenges in normal movement.
	Scenario sequence and Expected actions (blind to students)
	Checking for additional injuries. Involving the patient in different actions. Doing a postevaluation (can the patient manage alone)
Scenario (phase 3	**Learning outcomes and Notes for the debriefing**.
	Acting and evaluating their actions. Did it work? Is it possible for me as one person to try and lift this person. Is it better to provide assistance/comfortable setting and call for help. Patients' integrity and autonomy in the situation
Debriefing	**(ponder, if face-to-face or online; synchronous or asynchronous; individual or collective)**
	DURING THE FACILITATION online: How the participants felt and what they accomplished/witnessed; Positive aspects with reinforcement; Aspects to improve; Final synthesis Student: How did he/she feel? What did you witness? What would they do differently for the better? Peer comments and suggestions on good practice. NOTES: Identified risks for patient and for you. Used constructive communication. Techniques for mobilisation. Safety aspects. How did you take the patients integrity and autonomy (right to make decisions) into concideration. THE FINAL FEEDBACK on report and video Evaluating and giving feedback on their plan, preparation and actions. How about the person-centered and constructive communication, did the technique for the transfer work and how was the ergonomics taken into consideration? Was the patient's integrity and autonomy ensured? Facilitator/Teacher: From the beginning, they only address positive aspects, positive reinforcement that they have done a lot of things well. And then Question what would they do differently? Direct and ask students to make an overview of what was the scenario. Summarize the main points to retain according to the objectives.

Teacher's notes	it was not necessary

ANNEX 2 b - SCENARIO TEMPLATE (Script) PROVIDED BY BASKENT UNIVERSITY

Steps	**TITLE**
	PATIENT IN HYPOGLYCEMIA
	Target Audience, including if necessary some pre-requisites
	- Scientific area: Nursing - Level of education: Graduation - Year of attendance: 2nd year - Prerequisites - Prior acquisition of physical examination skills (A, B, C and E)
	Rational/Justification
	Integrate the fundamentals of patient assessment, clinical examination as well development the ability to act in unexpected patient situations.
	Objectives
	General objective: 1 Adequate approach to a case in the hypoglycemia **Specific objective:** 1.1 Identify signs of hypoglycemia 1.2 Identify diagnostic activities that lead to acquiring data with referential integrity to diagnose hypoglycemia. 1.3 Implement interventions with referential integrity to hypoglycemia diagnosis 1.4 Ability to intervene in hypoglycemia 1.5 Evaluate effectiveness of implemented interventions
	Skills to achieve
	Decision-making skills (related objective) - Physical examination (sweating, blackouts, dizziness, state of consciousness (1.1; 1.2) -Assess and interpret vital signs (blood glucose level; blood pressure; pulse, respiratory rate) (1.1.;1.2) -Oximetry interpretation (1.1; 1.2) -Basic airway management (1.3) **Hard Skills (hands-on) (related objective)** - Giving fluid therapy - Venous catheterization • - Monitor the patient • - Administering necessary medications (1.4;1.5) • - Assess blood glucose level (1.5) • - Administration of glucogan (1.4; 1.5)

	Problem Situation
	Male in his 50's Was found in his office collapsed on his desk He has regained consciousness He keeps complaining that he isn't feeling well This is the first time he was admitted to the emergency department No medical records could be found Scenario requires communication skills to assess the problem Scenario requires physical examination (A,B,C and E) Scenario ends after: hypoglycemia identified; blood glucose level measured; fluid therapy **Setting where scenario takes place** Emergency department (brought by caretaker family member)
On-line Scenario Setup	**Online Learning model**
	b-learning (blended learning) or **h-learning** (hybrid-learning) Itinerary: 1sf On-line syncronus (10%) (to provide all information and give feedbacks) and assyncronus (40%) for scenario development, training, providing educational materials related to hypoglycemia . To development knowledge, clinical decision-making, critical thinking & clinical reasoning, soft-skills); 2nd provide catheterization educational materials (20%) To consolidated knowledge of catheterization procedure; 3rd Presential on laboratory– 30% (for hands-on skills acquisition an final debriefing.
	VLE (virtual learning environment) or LMS (learning management system)
	Moodle and BI Studio® Moodle (Virtual Learning Environment that integrates the entire structuring of the scenario: information guides, training materials, LTI* or URL access, educational materials, etc) Body Interact® simulator BI Studio® (for report and scenario supervision access) * *(Learning Tools Interoperability)*
	Technological and Digital support tools and multimedia elements
	Virtual simulador**;** Moodle platform (asynchronous online session) ; Instrucional video; e-mail box;
	Digital resources digital content immediately understandable
	Body Interact® application (interactive digital simulator) PDF files (Guidelines for approaching a patient in hypoglycemia)
	Characterization of the environment/clinical context and simulated patient
	Emergency room (brought by caretaker family member)

Pre-scenario	**Initial information for the student**
	about online environment navigation All the information necessary for navigability in the virtual environment and use of resources **about clinical situation/ learning subject** Male in his 50's. Was found in his office collapsed on his desk. He has regained consciousness, but he keeps complaining that he is not feeling well. This is the first time he was admitted to the emergency room. So no medical records could be found.
Scenario (phase 1)	**Data the students find at the start of the scenario**
	Was found collapsed on his desk State of consciousness Not feeling well
Scenario (phase 2)	**Data to be searched**
	Dialogues Medical condition State of consciousness **Physical examination (A, B, C and E)** Airway Breathing Circulation Exposure
	Scenario sequence (blind to students)
	Dialogue with the patient Assess Vital Signs Assess physical examination Assess/Measure blood glucose Treatment/intervention decisions Fluid (%5 dextroz) therapy; medication
	Expected actions (blind to students)
	Dialogues Medical condition - Currently, how do you feel? - Are you feeling any pain or discomfort? - Where do you feel the pain? - State of consciousness - Please tell us your full name. - Could you please tell us your age? - Can you tell me where you are? - Do you know what month it is? **Physical examination** Airway observation - O2 Sat (%) and respiratory rate (breath/min) - Blood pressure (mmHg),

	• - Capillary refill time (seconds), • - Pulse palpation/heart rate (bpm), - Exposure - Circulation control **Treatments/Intervetions** • Monitoring • Venous catheterization • Fluid therapy (dextroz) • Medication (glucagon)
Scenario (phase 3)	**Learning outcomes and Notes for the debriefing** Performance appraisal and learning outcomes that allow debriefing systematizing
	Improved communication skills Improved decision-making skills Increased self-confidence Hands-on skills in the treatment of hypoglicemia
Debriefing	**Debriefing** (ponder, if: face-to-face or on-line synchronous or asynchronous; individual or collective)
	Debriefing report sent to student individually at the end of the scenario period and at a later time (short time) analyzed with the teacher (on-line synchronus session)
Teacher's notes	If necessary

ANNEX 2c - SCENARIO TEMPLATE (Script) PROVIDED BY NURSING SCHOOL OF COIMBRA

Steps	**Title**
Scenario	**MAN WITH URINARY RETENTION**
	Target Audience, including if necessary some pre-requisites
	Scientific Area: Nursing Level of education: Graduation Year: 3rd academic year Prerequisites : Prior acquisition of physical examination skills (A, B, C, and E)
	Rational/Justification (blind to students)
	Academic performance and the development of psychomotor skills, critical thinking and decision making ability of undergraduate nursing students, benefit from clinical cases-based learning. Complex emergency situations with confused adult are common. This scenario was created as an attempt to integrate the fundamentals of patient assessment, and clinical examination as well development of the ability to act in unexpected patient situation , in which acute urinary retention is the immediate urgency.

	Objectives (blind to students)
	General objective : 1 Adequate approach to a case of urinary retention. **Specific Objective :** 1.1 Identify signs of urinary retention 1.2 Identify diagnostic activities that lead to acquiring data with referential integrity to diagnose urinary retention 1.3 Implement interventions with referential integrity to urinary retention diagnosis 1.4 Acquire the skill of urinary catheterization 1.5 Evaluate effectiveness of implemented interventions
	Skills to achieve
	Decision-making skills (related objective) Abdominal examination (abdominal inspection and palpation) (1.1; 1.5) Assess and interpret vital signs (blood pressure; pulse, respiratory rate) (1.2); Oximetry interpretation (1.1; 1.2) Interpret capillary refill time (1.2; 1.3); Basic airway management (1.3) Respiratory rate and rhythm assessment and interpretation 1.3 **Hard Skills (hands-on) (related objective)** Bladder catheterization (male and female) 1.3; 1.4
	Problem Situation (blind for students).
	Problem/situation • 80 years old with arterial hypertension history • Bedridden, progressive dementia • Agitation and abdominal discomfort/complaints. • Urinary output (last 24) reduced • Scenario requires communication skills to assess the problem • Scenario requires physical examination (A, B, C, and E) • Scenario ends after: Arterial hypertension history identified; Urinary retention diagnosis; positioning adequately 45º fowler; Urinary catheterization **Setting where the scenario takes place** Emergency department (brought by a caretaker family member)
On-line Scenario Setup	**Online Learning model**
	b-learning (blended learning) or **h-learning** (hybrid-learning) Itinerary - 1st Online synchronous (10%) (for providing all information and debriefing) and On-line asynchronous – 40% (for scenario development, training, providing educational materials related to urinary catheterization, giving feedback) To development knowledge, clinical decision-making, critical thinking & clinical reasoning, soft-skills; 2nd On-line asynchronous (20%) (provide catheterization educacional materials) To consolidated knowledge of catheterization procedure; 3rd

	Presential on laboratory (30%) (for hands-on skills acquisition and final debriefing)
	VLE (virtual learning environment) or LMS (learning management system)
	Moodle and BI Studio ® Moodle (Virtual Learning Environment that integrates the entire structuring of the scenario: information guides, training materials, body interact LTI* or URL access, educational materials, etc) BI Studio (for report and scenario supervision access) * *(Learning Tools Interoperability)*
	Technological and Digital support tools and multimedia elements
	Virtual simulator**;** Zoom platform (synchronous online session); Instructional video; e-mail box;
	Digital resources digital content
	Body Interact® application (interactive digital simulator) PDF files (Urinary catheterization recommended practice and guidelines: equipment, preparation of patients, and procedure) Instructional video displaying urinary catheterization clinical steps.
	Characterization of the environment/clinical context and simulated patient
	Emergency room (brought by a caretaker family member)
	Documentation clinical record
	N/A
Pre-scenario	**Initial information for the student**
	about online environment navigation All the information necessary for navigability in the virtual environment and the use of resources **about clinical situation/ learning subject** Male patient, 80 years old, bedridden, with progressive dementia, brought to the Emergency Department due to agitation and abdominal complaints. A caretaker's family member informed that the patient has not urinated much in the past 24 hours.
Scenario (phase 1)	**Data the students find at the start of the scenario**
	Abdominal discomfort and complaints Agitation Low urinary output in the past 24h
Scenario (phase 2)	**Data to be searched** (blind to students)
	Dialogues Medical condition State of consciousness **Physical examination (A, B, C, and E)** Airway Breathing

	Circulation Exposure
	Scenario sequence (blind to students)
	Dialogue with the patient Assess vital signs Assess physical examination Treatment/intervention decisions Urinary catheterization; Supine position (Fowler 45º)
	Expected actions (blind to students)
	Dialogues Medical condition - Currently, how do you feel? - Are you feeling any pain or discomfort? - Where do you feel the pain? State of consciousness - Please tell us your full name. - Could you please tell us your age? - Can you tell me where you are? - Do you know what month it is? **Physical examination** Airway observation • O2 Sat (%) and respiratory rate (breath/min) • Blood pressure (mmHg), • Capillary refill time (seconds), • Pulse palpation/heart rate (bpm), Exposure • Abdominal palpation **Treatments/Intervention** • Urinary catheterization • Patient Position (Fowler 45º)
Scenario (phase 3)	**Learning outcomes and Notes for the debriefing**
	Improved communication skills Improved decision-making skills Increased self-confidence Hands-on skills of urinary catheterization)
Debriefing	**(ponder, if face-to-face or online synchronous or asynchronous; individual or collective)**
	Feedback, about each tentative to solve clinical case, send to students during on-line asynchronous learning and debriefing report sent individually at the end of this period and at a later time (short time) analyzed with the teacher (online synchronous session) and another debriefing after laboratory urinary catheterization training (presential session)
Teacher's notes	If necessary

ANNEX 2 d - SCENARIO TEMPLATE (Script) PROVIDED BY LSMU

Steps	**TITLE**
	URINARY INCONTINENCE
	Target Audience, including if necessary some pre-requisites
	- Scientific area: Nursing - Level of education: Bachelor students - Year of attendance: 2nd year - Prerequisites - Prior acquisition of physical examination skills (A, B, C and E)
	Rational/Justification
	Integrate the fundamentals of patient assessment, clinical examination as well development the ability to act in unexpected patient situations.
	Objectives
	General objective: 1 Adequate approach to a case of reflex urinary incontinence **Specific objective:** 1. Identify signs of reflex urinary incontinence 2. Identify diagnostic activities that lead to acquiring data with referential integrity to diagnose reflex urinary incontinence 3. Implement interventions with referential integrity to reflex urinary incontinence diagnosis 4. Evaluate effectiveness of implemented interventions
	Skills to achieve
	Decision-making skills (related objective) - Physical examination (cough stress test; pelvic floor assessment) -Assess and interpret vital signs (blood pressure; pulse) **Hard Skills (hands-on) (related objective)** - Giving fluid therapy - Venous catheterization • - Monitor the patient • - Administering necessary medications 1 - Abdominal examination (inspect, auscultation, percuss and palp) 2 - Bladder catheterization (male and female) 3 - Bladder stimulation techniques performance

	Problem Situation
	A 24-year-old female victim of a motor vehicle crash four weeks ago resulted in severe TBI and vertebral brain injury in L3-L4 with loss of motor and sensory function. The patient is currently confused (O4-M6-V4). Urinary catheter removal was performed five hours ago and the patient has not yet urinated. **Context** Patient was hospitalized four weeks ago after a car accident
Scenario Setup	**Online Learning model**
	b-learning (blended learning) • Face to face – 30% (to provide all information and give feedbacks) • On-line asynchronous – 70% (for scenario development, training, provide educational materials related to urinary incontinence etc);
	VLE (virtual learning environment) or LMS (learning management system)
	Seminar room; Moodle and BI Studio® Seminar room – for introducing scenario and giving feedbacks Moodle (Virtual Learning Environment that integrates the entire structuring of the scenario: information guides, training materials, educational materials, etc) Body Interact® simulator BI Studio® (for report and scenario supervision access)
	Technological and Digital support tools and multimedia elements
	Virtual simulador**;** Moddle platform (asynchronous online session) ; Instrucional video; e-mail box;
	Digital resources digital content immediately understandable
	Body Interact® application (interactive digital simulator) PDF files (Guidelines for approaching a patient in urinary incontinence)
	Characterization of the environment/clinical context and simulated patient
	Hospital
Pre-scenario	**Initial information for the student**
	about online environment navigation All the information necessary for navigability in the virtual environment and use of resources

	about clinical situation/ learning subject A 24-year-old female victim of a motor vehicle crash four weeks ago resulted in severe TBI and vertebral brain injury in L3-L4 with loss of motor and sensory function. The patient is currently confused (O4-M6-V4). Urinary catheter removal was performed five hours ago and the patient has not yet urinated.
Scenario (phase 1)	**Data the students find at the start of the scenario**
	State of consciousness Not feeling well
Scenario (phase 2)	**Data to be searched**
	Dialogues Medical condition State of consciousness **Physical examination (A, B, C and E)** Airway Breathing Circulation Exposure
	Scenario sequence (blind to students)
	Dialogue with the patient Assess Vital Signs Assess physical examination Assess/Measure blood pressure Treatment/intervention decisions Fluid therapy; medication
	Expected actions (blind to students)
	Dialogues Medical condition - Currently, how do you feel? - Are you feeling any pain or discomfort? - Where do you feel the pain? - State of consciousness - Please tell us your full name. - Could you please tell us your age? - Can you tell me where you are? - Do you know what month it is? **Physical examination** - Blood pressure (mmHg), • - Capillary refill time (seconds), • - Pulse palpation/heart rate (bpm), - Exposure

	Treatments/Intervetions • Monitoring • Venous catheterization • Fluid therapy • Medication
Scenario (phase 3)	**Learning outcomes and Notes for the debriefing** Performance appraisal and learning outcomes that allow debriefing systematizing
	Improved communication skills Improved decision-making skills Increased self-confidence Hands-on skills in the treatment of urinary incontinence
Debriefing	**Debriefing** (ponder, if: face-to-face or on-line synchronous or asynchronous; individual or collective)
	Debriefing report sent to student individually at the end of the scenario period and at a later time (short time) analyzed with the teacher (face to face session)
Teacher's notes	If necessary

ANNEX 2e - SCENARIO TEMPLATE (Script) PROVIDED BY MÄLARDALEN UNIVERSITY

Steps	**MÄLARDALEN UNIVERSITY - SCENARIO TEMPLATE**
Scenario	**Title**
	INTEGRATE BEHAVIORAL MEDICINE APPROACH IN THE PHYSIOTHERAPEUTIC FUNCTIONAL BEHAVIOR ANALYSIS.
	Target Audience, including if necessary some pre-requisites
	- Scientific area: Physiotherapy - Level of education: Undergraduate - Year of attendance: Second year students - Prerequisites – Theoretical knowledge of the biopsychosocial approach and health related behaviour change theories. Physical examination skills.
	Rational/Justification (blind to students)
	Why was this scenario created/needed? This scenario is created to stimulate student active learning based on experience-based learning, reflection, social learning, blended learning and a mix of online and classroom activities.
	Objectives (blind to students)
	The objective is to develop clinical reasoning skills and learn a systematic process for how to perform a physiotherapeutic functional behavior analysis

	based on SIRC (Situation, Individual factors, Responses, Consequences), i.e. identify biomedical/physical, psychological and contextual factors of importance for a target behaviour, based on interview with and assessment of a patient, and write a hypothesis about patients' health problems.
	Skills to achieve (blind to students)
	- history taking - conversational techniques - identifying patients' target behaviours from a biopsychosocial perspective - training to take anamnesis - clinical reasoning skills regarding assessment and analysis of the findings
	Problem Situation
	The clinical reasoning skills are practiced in relation to fictive cases illustrating patients visiting a physiotherapist in primary health care and at a hospital.
On-line Scenario Setup	**Online Learning model**
	Blended Learning
	VLE (virtual learning environment) or LMS (learning management system)
	Virtual Learning Environment (VLE) was CANVAS
	Technological and Digital support , multiple communication tools and multimedia elements
	Digital lectures as videos and videos with role-play. CANVAS environment
	Digital resources
	The students use CANVAS collaboration function for working together with the same document.
	Characterization of the environment/clinical context and simulated patient
	n/a
	Documentation clinical record
	n/a
Pre-scenario	**Initial information for the student**
	About clinical situation/ learning subject Flipped classroom is used for this scenario, prioritizing the time with the students as student active workshops. The students prepare for the workshops at home, reading the course literature, and the course web platform "Canvas" offered pre-recorded lectures and videorecorded role-play scenarios for model learning. In the classroom small group discussions are carried out, focusing on the lectures and video-recorded role-plays, and clinical reasoning skills in fictive cases. The students are guided to practice communication skills

	and history taking with each other in role plays, and to reflect together on their own and others' performance. To support the students learning of clinical reasoning skills, a digital tool is used in the classroom. In small group discussions in the classroom the students identify relevant assessment methods related to a fictive case, and how they wanted to conduct the assessment. In combination with the small group discussions a digital tool in Canvas called "Collaboration" is used. Each group identifies relevant assessments, which are then documented in a joint power point in accordance with the SIRC model on Canvas, meaning that all the small student groups discuss the assessment of the fictive case and can watch their own and the other groups documentation of relevant assessment methods in the power point in real time and learn from each other.
Scenario (phase 1)	**Data the students find at the start of the scenario**
	The information is presented in the text above and below.
Scenario (phase 2)	**Data to be searched** (blind to students)
	Scenario sequence and Expected actions (blind to students)
Scenario (phase 3	**Learning outcomes and Notes for the debriefing**.
	Two of the course learning outcomes related to the presented scenario are: After completing the course, the student should be able to: - based on collected data from assessments, conduct functional behavioral analyzes and apply central concepts in learning theories and health psychology theories and models - written and verbal compilation and analysis of collected data from assessments for physical and psychological variables at individual and group level
Debriefing	**(ponder, if face-to-face or online; synchronous or asynchronous; individual or collective)**
Teacher's notes	The students were satisfied with the teaching model. It also increased their confidence in applying digital resources for learning of the development of the functional behavioral analysis.

ANNEX 2f - SCENARIO TEMPLATE (Script) PROVIDED BY RĪGA STRADIŅŠ UNIVERSITY

Steps	**Title**
Scenario	**"CALCULATING AND ADMINISTERING MEDICATION VIA A NEEDLELESS PRESSURE VALVE WITH CORRECT PATIENT IDENTIFICATION"**
	Target Audience, including if necessary some pre-requisites
	Area: nursing students Level: Bachelor Year: 2nd and 3rd study year
	Rational/Justification
	The data shows that 1 in 10 patients are harmed in the hospital. Patient identification, medication errors that include wrong medication, incorrect dosage and or route of administration are most commons (WHO, 2019).
	Objectives *(blind to students)*
	To administer correct dose of medication to the patient via needleless pressure valve and using correct patient identification.
	Skills to achieve *(blind to students)*
	1. Communication with the patient 2. Correct patient identification 3. Calculation of the dose of medication 4. Medication administration via needles pressure valve
	Problem Situation
	There are two parts for the simulation. 1) First one is work at the "procedural room", where students has to prepare medication. Doctor has prescribed specific dosage of antiemetic drug ondasetron for the patient. Students have to do the calculation, to find out amount (ml) what will should be taken out from ampule. Then prepare medication as prescribed and prepare all the equipment to be ready to visit patients' room. This part of the work is managed in Z*oom*, students are using camera to show their work and after medication calculation give information in the Z*oom* chat box. 2) In the second part students are divided in three groups: – group of patients – group of nurses – group of observers Each group are directed to separate Z*oom* breakout rooms and instructed about their roles and tasks. After instructions students are directed to the "wards" (*Zoom* breakout rooms) where one participant of each group is located (each ward must have one patient, one nurse, one observer) and simulation can begin. Simulation is taking up to 20 minutes and after the tasks has been finished participants must return to main zoom meeting.
	Online Learning model
	h-learning (hybrid-learning) or e-learning

On-line Scenario Setup	**VLE (virtual learning environment) or LMS (learning management system)**
	• Moodle • Zoom
	Technological and Digital support tools and multimedia elements
	Guidance pictures, Powerpoint, Mentimeter, email system, synchronous online sessions
	Digital resources
	Presentations of taught topics, videos of skill management, device user guidelines, study concept guide, guide for technological devices during meetings.
	Documentation clinical record
	For simulation purposes developed documentation available to the student during the scenario.
Pre-scenario	**Initial information for the student**
	About online environment navigation - Introduction with participants, todays aim and tasks of project Zoom simulation. - Tutorial of how to use Zoom platform. - Instructions for using the cameras during simulation. - Information about today's simulations plan - First and Second part. - Online simulation plan – prebrief (technical and psychological safety), part one and part two of simulation, debrief. **About clinical situation/ learning subject** - Students receive task for first part and do the calculation and preparation of the medication before going to the patient's room. - In second part students receive information about the need to be divided in three groups, first one is group witch participants are going to be the nurses during situation, second group are patients and third group are observers during the simulation - Before start of the simulation students are divided in *zoom* groups (breakout rooms) and given patient, nurse or observer instructions. - Then students divided in the groups (breakout rooms) of three where each person has their own role. - Simulation is taking up to 20 minutes. - After the tasks has been finished participants can return to main zoom meeting.
Scenario (phase 1)	**Data the students find at the start of the scenario**
	Patient instruction: Jana Linge 13.11.1993, Hospital number 47769, personal code 13111993 - 10568 Last night at about 22.00 your stomach started to hurt a lot, at first less then only stronger and you vomited 2 times when you were at home. Your sister, with whom you live, called the ambulance and you were taken to hospital.

During the night, after all diagnostic and objective examinations, you were diagnosed with acute appendicitis, which was operated early in the morning. The surgical wound is covered with a plaster.
You do not have pain when lying down or sitting, the operation site hurts when you change position - get on your feet, lie down or sit down. You have the peripheral catheter in your hand, it doesn't hurt and the medication administration is painless. You complain of nausea for about 15 minutes, and vomited earlier.
A nurse will come to you to administer the anti-nausea medicine into the catheter in your arm.
During the digital scenario, your role is to talk and be the patient, but you will not need a PVK.
You are exhausted but grateful that the medical team managed to help. You wouldn't have called the ambulance so quickly if the sister hadn't insisted.
You are a cooperative patient, answer questions politely. If the nurse doesn't say hello, tell you what she is going to do, tell you what the medication is, how often it will be given, etc., feel free to ask.
If during the role play you are asked a question that is not in the scenario, please improvise, but do not leave the frame of a cooperative patient who has undergone surgery.

Nurse instruction:
You are a nurse.
Your task is to administer 4 mg Ondansetron diluted to 20 ml NaCl 0.9% to the patient.
Ondansetron is an antiemetic or anti-nausea medication.
The route of administration of the medication is a peripheral venous catheter with a positive pressure needleless adapter.
During the simulated situation you have to communicate with the patient as in any other situation, despite the fact that this time the scenario will be digital.
Your tasks are to identify the patient and administer the medication in the cannula.

Patient information nurse receives:
Jana Linge, b. d. 13.11.1993, hospital number 47769, personal code 13111993 - 10568
Yesterday evening at about 22.00 the patient started to have severe abdominal pain, at first less then only stronger and the patient has vomited 2 times while at home. The patient was taken by ambulance to the admission ward where acute appendicitis was diagnosed during the night and an appendectomy was performed at 5.00. The patient is currently in the abdominal surgery ward and 15 minutes ago the patient vomited, complaints of nausea. The surgical wound is covered with a plaster and is dry and clean. The patient has peripheral catheter.

Observer instruction:

You are an observer of the situation. Your role is to be neutral and observe the care activities and communication with the patient.

During the simulated situation you will have the camera and microphone turned off. You will not communicate with the participants during the situation. Your name will need to be changed to WATCHER during the situation to be less disruptive to the participants, also please turn off your camera.

You have an observation protocol to fill in. You can do this on your computer, on your phone or by filling in a paper copy.

After the simulation, during the discussion part, your observations will be listened to and you will have the opportunity to express your thoughts to all participants in the situation.

Observer checklist

Action	done	not done	comments
Greeting			
Introduction (name and profession)			
Correct patient's ID check			
Explaining the procedure/manipulation/telling what will be done to the patient			
Disinfection of needles adapter			
Catheter flushing with saline			
Administration of medication			
Catheter flushing with saline			
Disinfection of needles adapter			
Communication with patient			
Goodbye saying			

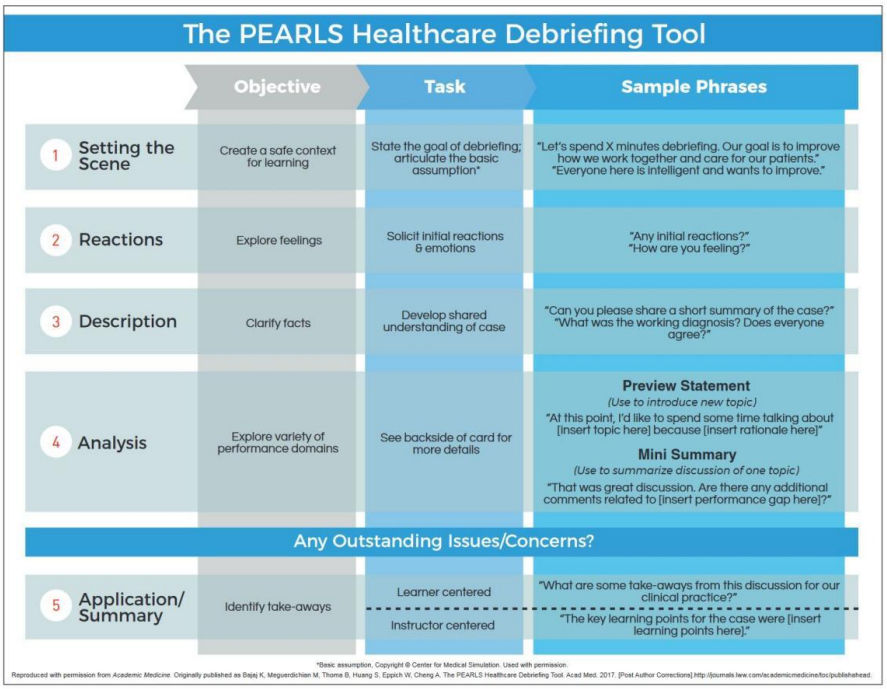
Scenario (phase2)

Data to be searched (blind to students)

Scenario sequence and Expected actions (blind to students)

In the patient room students are expected to do all the tasks as their role requires.

Observers are filling protocol and after simulation active part participants are in the common room to have and debrief.

Scenario (phase 3) Debrief-ing	**Learning outcomes and Notes for the debriefing**  Debriefing is done by using Pearls debriefing tool. Learning outcomes are also spoken through.
Teach-er's notes	it was not necessary

ANNEX 3 - Questionnaires Measured Outcomes

Self-directed b-learning capacity confidence in VLE (SDLC) (pre AND post-test)	
Q1	I feel able to use online digital resources to develop practical skills
Q2	I feel confident in my ability to solve problems independently.
Q3	I feel confident when navigating virtual learning environments
Q4	I feel confident in learning practical skills in b-learning/h-learning mode
Q5	I feel confident in my skills needed to learn in virtual learning environment
Q6	I feel confident in the e-learning modality as a methodology applicable to the learning of practical skills
Q7	I feel confident in my ability to self-directed learn practical skills

Student´s perceptions of b-learning pedagogical and technical domains (PTD) (Post-test)	
D1	***Design of the b-learning activity/learning***
d1	Time provided was adequate for training my skills/competencies through the scenario
d2	The activity addressed each learning objective
d3	The methodology promoted student accountability/autonomy in their learning
d4	The design of the virtual environment (Moodle; Body Interact) promoted motivation and interaction with the content (active-student relationship)
d5	The presentation of the interface (user/activity) is aesthetic and creative
d6	This activity presented content relevant to my practice
D2	***Readability, navigability and accessibility in the VLE***
d7	Instructions are easy to find in the proposed design/environment
d8	Navigation in the virtual learning environment is intuitive
d9	The layout allows understanding of the functions, features and resources used
d10	There are clarifying guidelines on the methodology and resources to be used
d11	The contents described are described and with a stimulating interactive language and style
D3	***Information provided, follow-up and feedback in the VLE***
d12	The instructions provided were clear for each task or activity
d13	The feedback given by the teacher was relevant for personal development and motivation in that virtual environment
d14	The educational materials provided (at the beginning and on-going) were sufficient to carry out the activity
d15	Clinical case design improved the learning experience
d16	This content is well organized, and the transition from one task to another is logical.

Student´s Perception of b-learning facilitators (Post-test)	
F1	Educational materials made available (previously and ongoing)
F2	The combination of "on-line synchronus", "on-line assyncronus" and "face-to-face" in an integrated way
F3	Autonomy in learning management (execution times, possibility of repetition, personalized rhythm)
F4	The design of the environment, resources and tools available
F5	Conjugation of different resources/support materials (audio, video, text and images)
F6	Easy and permanent accessibility to guidelines/instructions on navigation in the environment and content/activity
F7	The incorporation into the setting of real-life factors, circumstances and variables.

Student satisfaction and Self-confidence in learning Scale© (Post-test)

Simulation Design Scale Educational Practices and Importance© (Post-test)