Research article

The experiences of social and health care and health sciences educators of implementing hybrid teaching in higher education: A qualitative study

Marjo Mensonen [a,1], Sari Pramila-Savukoski [a,*,1], Kristina Mikkonen [a,b], Tiina Törmänen [c], Jonna Juntunen [a], Heli-Maria Kuivila [a]

[a] *Research Unit of Health Sciences and Technology, University of Oulu, Oulu, Finland*
[b] *Medical Research Center Oulu, Oulu University Hospital and University of Oulu, Oulu, Finland*
[c] *Learning and Learning Processes Research Unit, University of Oulu, Oulu, Finland*

ABSTRACT

Background: Educators in the social and health care and health sciences fields play a key role in developing the competencies of health professionals and experts. The increase in hybrid education in higher education provides flexible education but also causes additional stress for educators. In order to develop educators' competencies in hybrid teaching, it is necessary to understand educators' experiences of that. In this study, hybrid teaching means synchronous face-to-face and distance teaching.
Objectives: The study aims to describe the experiences of social and health care and health sciences educators of hybrid teaching in higher education.
Design: We employed a qualitative descriptive research design.
Participants: A total of 21 social and health care and health sciences educators were interviewed.
Methods: The data was collected through semi-structured interviews in seven group interviews and an individual interview from February 2022 to April 2022. The data was analysed using inductive content analysis.
Results: Educators felt that hybrid education brought flexibility to their teaching activities and have implemented it successfully. Moreover, educators shared that implementing hybrid teaching requires them to have pedagogical competence and technology skills, ensuring interaction with students and creating a safe learning environment. Their positive attitude towards digital pedagogy is essential. Educators recognised the need to ensure students' digital skills in hybrid education. Moreover, challenges related to assessment were also identified. Educators experienced increased workload due to pressures, psychological strain and distribution of attention. They felt that they needed support and adequate resources to implement it.
Conclusions: The results have societal value in enhancing educators' continual professional development, developing high-quality evidence-based teaching and student skills, and assessing and applying different digital solutions to hybrid education.

1. Introduction

The World Health Organisation (WHO) has estimated that by 2030 there will be a shortage of 18 million health professionals worldwide, requiring reconsidering traditional education models (WHO, 2022a; WHO, 2022b). Changes in society and the world of work have made it necessary to continuously review and develop the competence of social and health care educators. Such educators are important in ensuring the competence of health professionals and experts (European Commission, 2020a; Mikkonen et al., 2019).

The development of digitalisation and flexible solutions in education has changed educators' work and the need for competence development (European Commission, 2020a) in extensive digital pedagogy (Organisation for Economic Cooperation and Development (OECD), 2020). Educators need support and motivation to adopt new teaching methods to educate the future workforce and enable them to develop their skills

(United Nations, 2020; WHO, 2022b). It is important also to ensure that human interaction and well-being are prioritised in developing education (United Nations Educational, Scientific and Cultural Organisation (UNESCO), 2020).

With regard to the digitalisation of education, hybrid methods have gained considerable ground (Educause, 2021). Hybrid teaching, which implies synchronous face-to-face and distance modes of teaching, increases flexibility in the learning process compared to face-to-face learning (Du et al., 2022). However, hybrid education has been stressful for distance learners, face-to-face learners (Bower et al., 2015) and educators (Bower et al., 2015; Raes et al., 2020; Wang, 2021). Research on hybrid teaching studies mainly focuses on pedagogical and technological design (Raes et al., 2020), students' experiences (Lakhal et al., 2021; Raes, 2022; Raes et al., 2020; Wang and Huang, 2018) and the views of educators (Lakhal et al., 2021). To the best of our knowledge, there are no studies on the experiences of social and health care and health sciences educators with hybrid teaching.

To fill this gap, we aim to explore the experiences of social and health care and health sciences educators in implementing hybrid teaching in social and health care, and health sciences education in higher education. The results could be used to develop the training of educators in relation to the implementation of hybrid education and provide support in flexible learning for students and, thus, ensure higher quality of the students' competence. This study provides societal value in developing evidence-based education on a new phenomenon by further enabling new knowledge to be used for better pedagogical solutions and models and ensuring students' competence development (Mikkonen et al., 2022) and well-being (UNESCO, 2020).

2. Background

The training programmes and minimum qualifications for educators in social and health care (European Commission, 2020), and health sciences fields (National League for Nursing (NLN), 2019; Oprescu et al., 2017) vary from country to country. Social and health educators are required to have several years of experience in the social and health sectors as well as pedagogical competence (NLN, 2019; Universities of Applied Sciences Act 1129/2014; WHO, 2016). For example, in Finland, the qualification of social and health care educators is regulated by law to ensure a high level of competence and also a certain amount of pedagogical studies or working experience (Government Decree amending Decree 1150/2017 on qualification requirements for teaching staff, Section 13a.) Health science educators commonly work in universities. They are generally required to have a master's and/or doctoral degree and at least two years of professional experience in a health-related field (European Union, 2017; Oprescu et al., 2017; NLN, 2019). In this study, a social and health care educator represents an educator working at the University of Applied Sciences and a health sciences educator working at a university.

Social and health care educators are required to have competence in pedagogy; ethics and culture; interaction, collaboration, and network; and in welfare and administration, all of which together are referred to as micro-level competence. Macro-level competence includes evidence-based practice, competence in sustainable innovation and future, and continual competence development (Mikkonen et al., 2019). Digitalisation and flexibility in education have changed the need for competence development (European Commission, 2020a). The European Framework for Digital Competencies for Educators (DigCompEdu) has identified 22 digital competencies, divided into six domains (Redecker, 2017): professional engagement, digital resources, teaching and learning, assessment, empowering learners, and promoting learners' digital competence (Redecker, 2017). Competencies are highly complex, as they are constantly changing according to health care organisations and policy structures (Mikkonen et al., 2018.) Educators are required both to be able to work in digital learning environments and competence to continuously develop digital teaching, as the use of information and communication technologies (ICT) is constantly increasing and its promotion is a key educational policy objective (van der Vlies, 2020).

Hybrid teaching offers an alternative means of delivering education and provides flexibility (Lakhal et al., 2021; Raes et al., 2020; Saichaie, 2020). The term hybrid is used variously as 'blended synchronous learning' (Bower et al., 2015), 'HyFlex' (Leijon and Lundgren, 2019), and 'synchronous blended learning' (Raes et al., 2020). The strengths of hybrid learning are related to practical, educational, and economic benefits (Bower et al., 2015; Du et al., 2022). Hybrid teaching enables teaching to occur in exceptional circumstances such as during natural disasters, changes in family situations or illness (Wang et al., 2018) and fosters a sense of community between face-to-face and distance learners (Bower et al., 2015).

The challenges of hybrid teaching are mostly related to pedagogical and technical challenges (Lakhal et al., 2021; Raes et al., 2020), such as adapting pedagogical methods and technological skills of students and educators (Lakhal et al., 2021). Challenges have also been identified in terms of interaction (Leijon and Lundgren, 2019) and in maintaining the remote participation of students (Samson, 2020) or teaching manual skills (Divanoglou et al., 2018). The main challenge is ensuring students' development of competencies and achieving learning objectives (OECD, 2020; van der Vlies, 2020). In addition, educators must have the necessary skills to assess students' learning (Redecker, 2017). Hybrid learning requires self-directed learning from the students (Ma and Lee, 2021) as well as adequate support from educators (Pramila-Savukoski et al., 2023).

Hybrid teaching requires educators to have information and communication technology (ICT) skills (Lakhal et al., 2021), increased didactic skills for planning, and skills to communicate and interact equally (Bower et al., 2015; Lakhal et al., 2021) and simultaneously in different spaces (Leijon and Lundgren, 2019). As noted above, there are studies on hybrid learning, but little on the experiences of educators in social and health care, and health sciences fields concerning hybrid teaching experiences. The research addressed the following research question: What kind of experiences do social and health care and health sciences educators have in implementing hybrid teaching in higher education?

3. Methods

3.1. Study design

This research was conducted as a qualitative descriptive study design. The study applied critical realism, a philosophical way of thinking, focusing on the educators' beliefs and the experiences. Critical realism is the view that knowledge comes from participants' beliefs and perspectives (Koopmans and Schiller, 2022). Qualitative research aims to explain certain phenomena and provide an in-depth understanding of it (Kyngäs, 2020).

3.1.1. Participants

The purposive sampling was used to obtain a heterogenous group that met the inclusion criteria (Kyngäs et al., 2020). The participants were invited from 5 universities and 12 universities of applied sciences. In Finland, it is possible to study for a bachelor's or master's degree in health sciences (including a major subject of nursing science, health management and public health) at university and a social and health care professional qualification in bachelor's degree (e.g. registered nurse, physiotherapist) at university of applied sciences. The inclusion criteria for the participants were that they had 1) teaching experience in hybrid teaching, 2) the opportunity to participate in a virtual interview in Finnish, and 3) willingness to participate as a volunteer in the study. Participants were recruited through the organisations' contact persons who were designated research liaisons or educational team leaders within the organisation and were given information on the research and a Webropol online survey link for background information. A total of 21

educators (aged 32–60 years) participated in the study. The characteristics of the participants are presented in Table 1.

3.1.2. Data collection

The participants responded to an invitation from eight universities of applied sciences and three universities from February 2022 to April 2022. Participants were selected randomly for the group by choosing a time most suitable for participants. Data was collected in seven groups, specifically five groups of 3–4 people, in two interviews with two participants and one individual interview. Due to cancellation and recruitment challenges, we conducted two interviews with two participants and one interview was conducted as an individual interview. Interviews were conducted using the semi-structured interview format that lasted, on average, for 74 min. The group interviews enabled discussion and collectively formulated knowledge regarding the phenomenon of interest (Orvik et al., 2013) and in-depth exploration of different perspectives (Polit and Beck, 2017). The interviews enabled the study to explore the subjects' experiences in a natural context (Kyngäs et al., 2020). The themes of the interviews (pedagogical competence, interaction, and technological competence) were based on theoretical knowledge (Table 2). The validity of the interview themes was tested during the first interview. The results of the first interview were included in the analysis of the overall data, as no changes were required. The interviewer (blinded) did not know the interviewees previously but had an understanding about the theme.

3.1.3. Data analysis

The data were analysed using inductive content analysis and this type of analysis was selected because little research has been conducted on the topic thus far (Kyngäs, 2020). The recorded interviews were transcribed into Word documents. The data analysis was initiated by

Table 1
The characteristics of the participants (n = 21).

Background	Participants
Gender, % (n)	
Female	100 % (21)
Male	0 % (0)
Age (years), mean (SD)	46.5 (8.3)
Minimum	32
Maximum	60
Education, % (n)	
Master's Degree from a university of applied sciences	4.8 % (1)
Master' Degree from a university	76.2 % (16)
Doctoral Degree	14.3 % (3)
Licentiate	4.8 % (1)
Teacher education, % (n)	
Vocational teacher education	42.9 % (9)
Teacher education in health sciences	47.6 % (10)
Teacher training in education	9.5 % (2)
The current job title, %, (n)	
Full-time educator	4.8 % (1)
Lecturer	85.7 % (18)
Part-time educator	9.5 % (2)
Educational field, % (n)	
Social sciences	19.0 % (4)
Healthcare	66.7 % (14)
Rehabilitation and sport	14.3 % (3)
Work experience in teaching (years), mean (SD)	8.7 (6.3)
Minimum	1.5
Maximum	27.1
Participation in conferences, national events, teacher exchanges, projects, or continuing education in previous two years, % (n)	
Yes	95.2 % (20)
No	4.8 % (1)
Experience of hybrid teaching, % (n)	
5–10 h of lessons[1]	4.7 % (1)
10–20 h of lessons	14.3 % (3)
20–30 h of lessons	14.3 % (3)
over 30 h of lessons	66.7 % (14)

[1] 1 lesson = 45 min.

Table 2
Themes and questions of the interviews.

THEME: PEDAGOGICAL COMPETENCE
What kind of experiences do you have about designing hybrid teaching?
What kind of things have contributed the implementation of hybrid teaching?
What kind of things have challenged the implementation of hybrid teaching?
What is your experiences of assessment in hybrid education?
What kind of competences does hybrid teaching require of the educator?
In your experience, what kind of support do you need to implement hybrid teaching?
THEME: INTERACTION
What kind of experiences do you have about educator-student interaction in hybrid teaching?
What kind of experiences do you have about the interaction between face-to-face and distance students in hybrid learning?
THEME: TECHNOLOGICAL COMPETENCES
In your experience, what kind of technological competence is needed in the implementation of hybrid teaching?
What are the challenges of technology in hybrid education?
What does technology enable in hybrid education?
In your experience, is there something that affects to educators' technological competence in hybrid education?
What kind of experiences do you have regarding students' digital pedagogical competence in hybrid teaching?
OTHER
What other experiences would you like to share about hybrid teaching?

reading the transcribed interviews several times and making notes. At the beginning of the analysis, meaningful expressions were extracted from the data (blinded) and coded by researchers (blinded). One researcher (blinded) conducted coding and later confirmed with other researchers (blinded). The codes (n = 1117) were grouped into subcategories (n = 137), categories (n = 31), and main categories (n = 10). Ultimately, the main categories were organised under three themes (n = 3) to help interpret the results. The data was considered to have reached saturation when no new knowledge arose in the last few interviews (Elo et al., 2014). The researcher (blinded) returned to the original expressions several times to check that the categories corresponded to the research questions. The results of the analysis were discussed among the research team members (blinded). The main themes obtained through inductive content analysis answered the stated research question (Kyngäs, 2020).

3.1.4. Trustworthiness

The criteria of confirmability, transferability, credibility, and reflexivity were used to assess the reliability of the research (Lincoln and Cuba, 1985). The credibility of the study was enhanced by selecting participants through appropriate sampling and reaching saturation (Kyngäs et al., 2020; Polit and Beck, 2017). The choice of an unstructured data collection method and the discussion of the analysis results with other involved researchers contribute to trustworthiness. In addition, authenticity is enhanced by the systematic use of multiple references in reporting to reveal the link between results and data. The researchers were aware of their own preconceptions of the phenomenon and analysed the data as objectively as possible to increase reflexivity. The standards for reporting qualitative research (SRQR), a synthesis of recommendations checklist was used to enhance the transparency of the study (O'Brien et al., 2014).

3.2. Ethical considerations

The research was conducted in accordance with the ethical principles of human research (Declaration of Helsinki, 2013). Permission to conduct the research was obtained from the participating organisations, the Dean of the University of (blinded) on 11.1.2022 according to the Finnish practices of research, not causing risk to participant's wellbeing (Finnish National Board on Research Integrity, 2023). As the participants were over 18 years old and no sensitive data was collected, no ethical approval was required according to the Finnish ethical standards

Educators were informed that participation in the study was voluntary and that their background information and interview data would be anonymised and stored confidentially only in password-secured files, which only certain research team members had the right to access. Participants filled written consents and had the right to withdraw from the study at any stage of the research process ([General Data Protection Regulation 2016/679](); [Data Protection Act 1050/2018]().)

4. Results

The experiences of social and health care and health sciences educators in the fields were described using three themes: Educator; interactive and safe learning environment; and technology and resources. The content analysis with categories and main categories are presented in [Table 3]().

4.1. Educator

This theme describes aspects associated with an educator's pedagogical competence in hybrid teaching, educators' characteristics and attitudes in implementing hybrid teaching, educators' workload when implementing hybrid teaching, and educators' need for support in implementing hybrid teaching.

4.1.1. Educators' pedagogical competence in hybrid teaching

The main category related to the pedagogical competence of educators comprised the following aspects: careful planning, managing challenges in designing hybrid teaching, educators' pedagogical teaching skills, educator's technical and digital skills, managing pedagogical solutions to support the cohesion of face-to-face and distance groups, supporting student participation and assessment in hybrid teaching. With regard to planning, educators found that hybrid teaching required a reassessment of teaching methods, as not all previous teaching models were suitable for hybrid teaching. Educators discussed managing challenges in designing hybrid teaching and believed that they need several contingency plans: "*The planning of facilities, links, if the network goes down, what to do then, and like taking care of things in advance and making a backup plan.*" (*I4, R3*). In addition, educators need pedagogical teaching skills, like appropriate implementation of a pedagogical model for hybrid teaching as well as technical and digital skills. Educators' experiences of their technical skills were varied. They needed more skills to support the development of students' digital skills: '*So it's an extra challenge (supporting students digitally), then I also feel that I don't have the skills to guide students in digital matters*' (I1, R2). With regard to the management of pedagogical solutions to support the cohesion of face-to-face and distance groups, educators reported that they had successfully used pair and small group activities and activating methods, but supporting participation and assessment was considered challenging.

4.1.2. Educator's attributes in implementing hybrid teaching

The main category of educators' attributes in implementing hybrid education consisted of the following aspects: the importance of educators' attitudes towards the hybrid education experience and the importance of educators' characteristics on the hybrid education experience. Positive attitudes were considered to greatly influence the teaching experience: '*In my opinion, the most important thing in implementing hybrid teaching is the attitude of the educator*' (I7, R2). According to educators, an open mind and the courage to experiment with a hybrid approach were necessary among educators. Educators described the importance of their characteristics, like the ability to deliver hybrid teaching in challenging situations (resilience), in hybrid education: "*You need to be flexible and have a backup plan ready in case your original plan does not work because of technology.*" (*I5, R3*).

Table 3

Content analysis of the experiences of educators in the social, health care and health sciences fields of implementing hybrid teaching in higher education.

Category	Main category	Themes
Careful planning	Educators' pedagogical competence in hybrid teaching	EDUCATOR
Managing challenges in designing hybrid teaching		
Educator's pedagogical teaching skills		
Educator's technical and digital skills		
Managing pedagogical solutions to support hybrid groups in teaching		
Supporting student participation		
Assessment in hybrid teaching		
The role of the educators' attitude in the hybrid learning experience	Educator's attributes in implementing hybrid teaching	
The role of educator characteristics in the hybrid teaching experience		
Different pressures when implementing hybrid teaching	Educators' workload when implementing hybrid teaching	
Distribution of educators' attention is a challenge in hybrid teaching		
Educators need a wide range of support to implement hybrid teaching	Educators' need for support in implementing hybrid teaching	
Lack of support as a challenge for successful hybrid education		
Team teaching as part of successful hybrid education		
Creating of a safe learning environment in hybrid education	Hybrid education environment and safety	INTERACTIVE AND SAFE LEARNING ENVIRONMENT
Rules and practices for hybrid education		
Diversity of interaction in hybrid education	Interaction as an important aspect in successful hybrid learning	
Challenges of interaction in hybrid education		
Aspects promoting interaction in hybrid education		
Hybrid education enables flexible teaching solutions for educators and students	Hybrid teaching enables flexible delivery of teaching	
Hybrid education allows the use of different pedagogical methods		
Technology's relevance in the implementation of hybrid education	The role of technology in hybrid teaching	TECHNOLOGY AND RESOURCES
Technical equipment and facilities as a prerequisite for hybrid education		
Technology management viewed as a challenge of hybrid education		
Lack of resources as a challenge for successful hybrid teaching	The importance of adequate resources for successful hybrid teaching	
Adequate resources as part of the implementation of hybrid teaching		
Students' digital competencies in hybrid learning	Students' resources in hybrid learning	
Students' activities and role in hybrid learning		
Students' needs for support in hybrid learning		

4.1.3. Educators' workload when implementing hybrid teaching

The main category related to educators' workload when implementing hybrid teaching comprised the following aspects: Different pressures when implementing hybrid teaching and distribution of educators' attention is a challenge in hybrid teaching. According to the educators, stress is caused by their expectations and fears about the success of hybrid teaching. Educators felt increasing psychological strain in this regard: '*We were exhausted after the day, which we weren't like we normally were when we had face-to-face with it*' (I3, R2). Educators reported that implementing hybrid teaching required them to divide their attention between several different things simultaneously: '*It is a real challenge to concentrate on many things simultaneously: distance and face-to-face students, technology, pedagogical solutions and what you are teaching*' (I8, R2).

4.1.4. Educators' need for support in implementing hybrid teaching

The main category related to educators' need for support in implementing hybrid teaching comprised the following aspects: Educators need a wide range of support to implement hybrid teaching, lack of support as a challenge for successful hybrid education, and team teaching as part of successful hybrid education. Educators perceive that they need a wide range of support to implement hybrid teaching, like that from supervisors, the work community, and the organisation as a whole: '*I felt like, should I do everything on my own, that I could have a technology expert in my team or something because the technology is not my core thing…So I do need support for it.*' (*I3, R2*). Educators needed continuous training with regard to activating teaching methods as well as the use of distance learning tools and software. Educators perceived the lack of support as a challenge to successful hybrid teaching. They highlighted the importance of team teaching to reduce stress: '*Team teaching would be really valuable in hybrid teaching because it would allow one educator to focus on the distance learners and the other educator to focus on the face-to-face learners*' (I4, R4).

4.2. Interactive and safe learning environment

The interactive and safe learning environment theme described the aspects of the hybrid learning environment and safety as well as interaction as an important aspect of successful hybrid learning; moreover, hybrid teaching enables flexible delivery of teaching.

4.2.1. Hybrid education environment and safety

The main category related to hybrid education environment and safety included: Creating a safe learning environment in hybrid education and rules and practices for hybrid education. Educators felt that educators and students were responsible for creating a safe learning environment. Educators reported that they attempt to create a safe atmosphere where a student is allowed to fail. Educators felt that a safe atmosphere is fostered by paying attention to distance learners, providing friendly guidance, taking care of security issues, and having mutually agreed upon rules and practices. Educators' efforts to promote a safe atmosphere were reflected in their attention to accessibility, attendance, and emotional support: '*I have told the students that the technical challenges we face are common. I think it contributes to a safe atmosphere*' (I8, R1).

4.2.2. Interaction as an important aspect in successful hybrid learning

The main category related to interaction as an important aspect in successful hybrid learning comprised the following aspects: Diversity of interaction in hybrid education, challenges of interaction in hybrid education, and aspects promoting interaction in hybrid education. Regarding the diversity of interactions, educators perceived hybrid teaching to be different from traditional teaching. They perceived that it was more difficult for people to get to know each other and that conversations were more superficial and shorter than those in traditional teaching. On the other hand, interaction had become, in their view,

multichannel, with students having parallel discussions or discussing on the same medium in private. According to educators, interaction was challenged by the large group size, the lack of familiarity with each other, and the use of audio technology. According to the educators, the interaction was facilitated by the small group size, the use of a camera, the active role of the educator, and various activating methods like games and polls: '*stimulating students with activating tasks regularly*' (I1, R1) or '*creating word clouds together on the platform*' (I8, R2). Educators reported that they attempted to leave sufficient space for discussion to ensure interaction between distance and face-to-face learners: '*It took a lot of work to find ways to create that experience of equal interaction*' (I6, R2). The educator's active role and interaction skills play an important role in interaction success in hybrid teaching.

4.2.3. Hybrid teaching enables flexible delivery of teaching

The main category that hybrid teaching enables flexible delivery of teaching was comprised the following aspects: Hybrid education enables flexible teaching solutions for educators and students, and hybrid education allows the use of different pedagogical methods. Educators believed that hybrid teaching brings accessibility and a lot of flexibility to themselves and students, thereby enabling them to use more varied approaches to teaching: '*In the past I have never had so many students participating in the teaching as I have now in the hybrid period*' (I3, R1). According to the educators, hybrid teaching enables them to use different pedagogical methods in their teaching: '*When I teach the simulation* […] *those who follow remotely, they also participate.*' (I3, R1). Another educator expressed: "*I use this kind of* "*escape room*"- *teaching in my teaching* […] *I have also used clinical skill workshops where students have gone around task points and a remote student has participated in the group activity* via *a laptop*" (I7, R2). Educators found teaching manual skills challenging. Nevertheless, hybrid teaching was considered to have the potential to develop into a permanent teaching method.

4.3. Technology and resources

The theme of technology and resources described aspects associated with the aspect of technology in hybrid teaching and the importance of adequate teaching and student resources.

4.3.1. The role of technology in hybrid teaching

The main category related to the role of technology in hybrid teaching included the concepts of technology's relevance in the implementation of hybrid education, technical equipment and facilities as a prerequisite for hybrid education, and technology management viewed as a challenge in hybrid education. When discussing the importance of technology, educators agreed that functioning technology is a prerequisite for implementing hybrid teaching. They perceived that technology had diversified different approaches to teaching and enabled students to participate in the learning process despite physical distance. However, educators believe that technology should be used appropriately. Educators consider that it is important to have suitable facilities available for hybrid teaching—for example, a sound system ready for use. '*We feel that we need classrooms suitable for hybrid teaching, which are ready for use and can be easily put into operation*' (I7, R3). Educators felt that the success of hybrid teaching was also influenced by the students' technical equipment and its functionality. Educators discussed the challenges associated with technology and its use, such as video/sound sharing and interaction and uncertainty about how to use technology.

4.3.2. The importance of adequate resources for successful hybrid teaching

The main category related to the importance of adequate resources comprised the following aspects: Lack of resources as a challenge for successful hybrid teaching and adequate resources as part of implementing hybrid teaching. Educators felt that sufficient resources were not available for implementing hybrid teaching. '*When I implement hybrid teaching with my current resources, it feels like I have two different*

lessons' (I6, R3). One challenge was updating skills. Educators felt that the large group size affected the quality of teaching, as they did not get sufficient time to provide students with sufficient support in digital skills during the lessons. Educators agreed that adequate resources, such as time, are needed to deliver quality hybrid teaching: '*The design phase has certainly taken me a lot more time than if I were designing to teach only online or only in the classroom*' (I8, R2).

4.3.3. Student's resources in hybrid learning

The main category related to students' resources in hybrid teaching comprised the following aspects: Students' digital competencies in hybrid learning, students' activities and roles in hybrid learning, and students' needs for support in hybrid learning. According to educators, students' digital competencies varied: certain students lacked sufficient technological competence, while others had high-level skills in e.g. using technological devices and applications. Concerning students' engagement and participation, educators perceived hybrid education to be suitable for active students, as the students themselves play a central role in interaction and learning situations and also helped educators during lessons by observing the chat and helping with technical issues. Challenges related to student engagement in hybrid teaching were also reported. Educators highlighted the engagement of distance learners in their learning: '*It often feels like there is no one behind the screen. Even when students are asked to respond, no one answers*' (I7, R1). Educators felt that hybrid teaching has increased the need for technical support and guidance for students on how to work with hybrid teaching—for example, at the beginning of their studies: '*In the same way that we are increasing hybrid education,* […] *we should remember to increase student support and guidance and invest even more in increasing study skills*' (I4, R5).

5. Discussion

This study described the experiences of social and health care and health sciences educators of implementing hybrid teaching in the social and health care and health sciences fields in higher education. The educators highlighted the importance of the pedagogical skills of educators in hybrid education, as the organisation of hybrid education required them to carefully plan pedagogical and technical aspects and to master pedagogical solutions to support face-to-face and distance learners. Moreover, the experiences of educators highlighted that the organisation of hybrid education requires educators to carefully plan pedagogical and technical aspects and to manage pedagogical solutions to support face-to-face and distance learners. The findings are in line with previous research that suggests that educators need to be able to adapt their teaching methods to a synchronous space (Raes et al., 2020). Further, in this study, educators experienced challenges related to supporting student engagement, such as activating students and maintaining their focus. In a recent study, Pramila-Savukoski et al. (2023) showed that traditional face-to-face teaching methods may not be suitable for distance learning. Also, this study reveals that new teaching methods must be developed for hybrid teaching. Based on the results of this study, attention should also be paid to assessment. The educators perceived that assessment had been carried out in various ways and it was felt challenging because traditional assessment methods are unsuitable for hybrid teaching. The scarcity of feedback and assessments from educators has negatively affected students learning (Pramila-Savukoski et al., 2023). Assessment is one of the digital competencies of educators, and consideration should be given to how digital technologies can be used to enhance existing assessment strategies (Redecker, 2017).

Further, in our study educators reported that when implementing hybrid teaching, they were overloaded with numerous tasks: the success of hybrid teaching and the students' survival. However, they perceived the importance of their positive attitudes in creating a successful hybrid education. Also, educators provided students support for using digital technology and displayed positive attitudes towards digital technology.

These have previously been shown to contribute to student well-being (Redecker, 2017) and the development of positive learning attitudes (OECD, 2020). Educators expressed the need for support from the organisation and the wider work community for access to continual professional development. Mikkonen et al. (2022) suggested that more experienced educators should mentor their less experienced colleagues to ensure high-quality teaching. The educators in this study suggested pair work as one solution to reduce the stress of hybrid teaching.

Educators also debated the role of the student in hybrid education in our study. The educators perceived students' digital competencies to be varied and also identified the need to develop their own competencies in relation to supporting students' competencies. The need to develop the digital competence of educators and students has also been identified in previous studies (Mikkonen et al., 2022; Pajari et al., 2022; van der Vlies, 2020). Educators understood and expressed that students' active engagement was a prerequisite for learning and emphasised the importance of providing students with adequate support. The presented findings are similar to what has been reported in research on the experiences of health sciences students related to digital learning (Pramila-Savukoski et al., 2023).

Further, the importance of an interactive pedagogical environment emerged from the educators' discussions. The educators sought to promote safety in their teaching by building common rules. This is known to be important for students' learning (Hardie et al., 2022). In hybrid teaching, interaction is important in providing a coherent and engaging learning experience for face-to-face learners (Bower et al., 2015). In a previous systematic review, Raes et al. (2020) identified challenges in activating and engaging distance learners and creating interaction among participants. The educators in this study identified similar challenges in terms of interaction, although they perceived the interaction to have taken place in a multichannel manner, as students used different ways to interact with each other. According to the educators in this study, the interaction was facilitated by small group size, the use of a camera, different activating methods, as well as the active role of the educator. Based on our results, we can conclude that attention should be paid to the safety of the interactive pedagogical environment.

The educators discussed the importance of having working technology and sufficient resources to implement hybrid education. In addition, while the educators acknowledged that technology could enrich teaching and enable the sharing of common experiences, they emphasised that the functionality of the technology is a prerequisite for successful hybrid education. Technology and facilities have been indicated to be important in hybrid education (Bower et al., 2015; Lakhal et al., 2021; Raes et al., 2020; Raes, 2022; Wang and Huang, 2018). In addition, educators emphasised the importance of adequate resources, as they felt that implementing quality hybrid education required more resources in numerous respects (e.g. pedagogical and technical) than traditional classroom-based education. Educators clearly expressed concerns regarding the quality of teaching and the ability to update skills or support students' digital literacy. These findings add to those of previous studies (Bower et al., 2015; Divanoglou et al., 2018; Redecker, 2017), which have identified the need to improve competencies in implementing education. Educators saw the potential for hybrid teaching to develop into a permanent way of teaching, which is in line with Du et al.'s (2022) study. In our study, educators indicated that hybrid teaching enables the use of different pedagogical methods in higher education. Educators have successfully implemented different kind of methods like simulation and group working (task points) in hybrid education. With a rapid change in digitalisation internationally, hybrid education needs to be further developed with new pedagogical methods and possibly the integration of artificial intelligence tools to reduce teaching resources and enhance human interaction.

5.1. Limitations and strengths

A limitation of this study is that one interview was conducted as an

individual interview and two interviews with two participants, whereas others were group interviews. However, the results of the interviews with one and two participants did not differ when compared to those of group interviews. Another limitation is that the results only reflect Finnish education, educators' competencies, and cultural approaches. This fact may limit the transferability of the study to an international perspective. The strength of this study is that it involved educators of different ages, thereby representing the various ways of different educational organisations to implement hybrid education. Future studies could extend this perspective by also asking students and educational planners about their experiences.

6. Conclusion

This study has a societal value, as this study provides a new understanding of the experiences of social and health care and health sciences educators with implementing hybrid teaching in fields of higher education. The results of this study reveal that educators need to have broad competence—for example, in pedagogical planning, technical implementation, and creating a safe atmosphere—when implementing a hybrid education. We suggest that continuous education for educators related to developing their hybrid teaching competence should be designed bearing in mind pedagogical and technical aspects. Furthermore, considering the appropriate use of teaching methods to support student interaction, collaborative learning and assessment are essential to achieving their learning objectives in a safe atmosphere. The results of this study suggest that hybrid teaching enables the use of different pedagogical methods successfully. Each institution should consider how it can support the capacity of its students and educators' actions and attitudes in hybrid learning to provide quality hybrid education.

Ethical approval

The Dean of the University of Oulu provided a statement (11.1.2022) that the planned research was ethically acceptable. Permission to conduct the research was obtained from the participating organisations. Ethical statement of ethical committee was not required according to Finnish data protraction act: https://www.oulu.fi/en/university/faculties-and-units/eudaimonia-institute/ethics-committee-human-sciences.

CRediT authorship contribution statement

Marjo Mensonen: Conceptualization, Formal analysis, Methodology, Visualization, Writing – original draft. **Sari Pramila-Savukoski:** Conceptualization, Formal analysis, Methodology, Visualization, Writing – original draft. **Kristina Mikkonen:** Conceptualization, Formal analysis, Methodology, Supervision, Visualization, Writing – review & editing. **Tiina Törmänen:** Writing – review & editing. **Jonna Juntunen:** Writing – review & editing. **Heli-Maria Kuivila:** Conceptualization, Formal analysis, Methodology, Supervision, Visualization, Writing – review & editing.

Declaration of competing interest

Given her role as Editor of the target journal, Professor Kristina Mikkonen had no involvement in the peer-review of this article and has no access to information regarding its peer-review. An independent editor was given full responsibility for the editorial process of this article.

References

Bower, M., Dalgarno, B., Kennedy, G.E., Lee, M.J., Kenney, J., 2015. Design and implementation factors in blended synchronous learning environments: outcomes from a cross- case analysis. Comput. Educ. 86, 1–17. https://doi.org/10.1016/j.compedu.2015.03.006.

Data Protection Act 1050/2018. https://www.finlex.fi/en/laki/kaannokset/2018/en20181050.pdf.

Declaration of Helsinki, 2013. Ethical principles for medical research involving human subjects. JAMA 310 (20), 2191–2194. https://doi.org/10.1001/jama.2013.281053.

Decree of the Government on amending the decree on qualification requirements for teaching personnel 1150/2017.

Divanoglou, A., Chance-Larsen, K., Fleming, J., Wolfe, M., 2018. Physiotherapy student perspectives on synchronous dual-campus learning and teaching. Australas. J. Educ. Technol. 34 (3), 88–104. https://doi.org/10.14742/ajet.3460.

Du, L., Zhao, L., Xu, T., Wang, Y., Zu, W., Huang, X., Wang, L., 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 https://doi.org/10.1016/j.nepr.2022.103354.

Educause, 2021. EDUCAUSE Horizon Report. Teaching and Learning Edition. Available at: https://library.educause.edu/-/media/files/library/2021/4/2021hrteachinglearning.pdf?#page=4&la=en&hash=64CACBDA4DAC0F6158951941AD2A8952A9A81100.

Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utriainen, K., Kyngäs, H., 2014. Qualitative content analysis: a focus on trustworthiness. SAGE Open 4 (1), 215824401452263. https://doi.org/10.1177/2158244014522633.

European Commission, 2020. Descriptors defining levels in the European Qualifications Framework (EQF). Available at: https://europa.eu/europass/en/description-eight-eqf-levels.

European Commission, 2020a. Communication from the commission to the European Parliament, The Council, The European Economic and Social Committee and The Committee of the Regions. Digital Education Action Plan 2021-2027. Resetting education and training for the digital age. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0624.

European Union, 2017. Recommendation on a European Qualifications Framework for lifelong learning and establishing a European Qualifications Framework for lifelong learning. Official Journal of the European Union. Council recommendation (2017/C 189/03). Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32017H0615(01).

Finnish National Board on Research Integrity, 2023. The Finnish Code of Conduct for Research Integrity and Procedures for Handling Alleged Violations of Research Integrity in Finland 2023. Available at: https://tenk.fi/sites/default/files/2023-05/RI_Guidelines_2023.pdf.

General Data Protection Regulation 2016/679. Regulation (EU) 2016/679 of the European Parliament and of the Council on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31995L0046.

Hardie, P., O'Donovan, R., Jarvis, S., Redmond, C., 2022. Key tips to providing a psychologically safe learning environment in the clinical setting. BMC Med. Educ. 22 (1), 1–816. https://doi.org/10.1186/s12909-022-03892-9.

Koopmans, E., Schiller, D.C., 2022. Understanding causation in healthcare: an introduction to critical realism. Qual. Health Res. 32 (8–9), 1207–1214. https://doi.org/10.1177/10497323221105737.

Kyngäs, H., 2020. Inductive content analysis. In: Kyngäs, H., Mikkonen, K., Kääriäinen, M. (Eds.), The Application of Content Analysis in Nursing Science Research. Springer, pp. 13–21.

Kyngäs, H., Kääriäinen, M., Elo, S., 2020. The trustworthiness of content analysis. In: Kyngäs, H., Mikkonen, K., Kääriäinen, M. (Eds.), The Application of Content Analysis in Nursing Science Research. Springer, pp. 41–48.

Lakhal, S., Mukamurera, J., Bédard, M., Heilporn, G., Chauret, M., 2021. Students and instructors' perspective on blended synchronous learning in a Canadian graduate program. J. Comput. Assist. Learn. 37 (5), 1–14. https://doi.org/10.1111/jcal.12578.

Leijon, M., Lundgren, B., 2019. Connecting physical and virtual spaces in a HyFlex pedagogic model with a focus on teacher interaction. J. Learn. Spaces 8 (1).

Lincoln, Y.S., Cuba, E.G., 1985. Naturalistic Inquiry. Sage, California.

Ma, L., Lee, C.S., 2021. Evaluating the effectiveness of blended learning using the ARCS model. J. Comput. Assist. Learn. 37 (5), 1397–1408. https://doi.org/10.1111/jcal.12579.

Medical Research Act 488/1999, 1999. Ministry of Social Affairs and Health, Finland. https://www.finlex.fi/fi/laki/kaannokset/1999/en19990488.pdf.

Mikkonen, K., Ojala, T., Sjögren, T., Piirainen, A., Koskinen, C., Koskinen, M., Koivula, M., Sormunen, M., Saaranen, T., Salminen, L., Koskimäki, M., Ruotsalainen, H., Lähteenmäki, M.L., Wallin, O., Mäki-Hakola, H., Kääriäinen, M., 2018. Competence areas of health science teachers – a systematic review of quantitative studies. Nurse Educ. Today 70, 77–86. https://doi.org/10.1016/j.nedt.2018.08.017.

Mikkonen, K., Koivula, M., Sjögren, T., Korpi, H., Koskinen, C., Koskinen, M., Kuivila, H., Lähteenmäki, M.L., Koskimäki, M., Mäki-Hakola, H., Wallin, O., Saaranen, T., Sormunen, M., Kokkonen, K.M., Kiikeri, J., Salminen, L., Ryhtä, I., Elonen, I., Kääriäinen, M., 2019. Social-, health care, and rehabilitation educators' competence and continous develompent (in Finnish). TerOpe- key goverment project. Acta Universitatis Ouluensis, University of Oulu. http://urn.fi/urn:isbn:9789526224794.

Mikkonen, K., Sorvari, P., Kuivila, H., Sjögren, T., Korpi, H., Koskinen, C., Kääriäinen, M., 2022. Social-, health care and rehabilitation educators' competence: a cross-sectional study. Scand. J. Educ. Res. 1–13. https://doi.org/10.1080/00313831.2022.2123853 ahead-of-print (ahead-of-print).

National League for Nursing, 2019. Certified Academic Clinical Nurse Educator. Candidate Handbook. National League for Nursing. Available at: https://www.nln.org/docs/default-source/default-document-library/cnecl-handbook_2022_revised-08.04.2022.pdf?sfvrsn=65d4b584_3.

O'Brien, B.C., Harris, I.B., Beckman, T.J., Reed, D.A., Cook, D.A., 2014. Standards for reporting qualitative research: a synthesis of recommendations. Acad. Med. 89 (9), 1245–1251. https://doi.org/10.1097/ACM.0000000000000388.

OECD, 2020. Strengthening online learning when schools are closed: The role of families and teachers in supporting students during the COVID-19 crisis. Available at: https://read.oecd-ilibrary.org/view/?ref=136_136615-o13x4bkowa&title=Strengthening-online-learning-when-schools-are-closed.

Oprescu, F., McAllister, M., Duncan, D., Jones, C., 2017. Professional development needs of nurse educators. An Australian case study. Nurse Educ. Pract. 27, 165–168. https://doi.org/10.1016/j.nepr.2017.07.004.

Orvik, A., Larun, L., Berland, A., Ringsberg, K.C., 2013. Situational factors in focus group studies: a systematic review. Int. J. Qual. Methods 12 (1), 338–358.

Pajari, J., Sormunen, M., Salminen, L., Vauhkonen, A., Aura, S., Koskinen, M., Saaranen, T., 2022. The appearance of digital competence in the work of health sciences educators: a cross-sectional study. Comput. Inform. Nurs. 40 (9), 624–632. https://doi.org/10.1097/CIN.0000000000000930.

Polit, D.F.k., Beck, C.T., 2017. Nursing Research: Generating and Assessing Evidence for Nursing Practice, Tenth edition. Wolters Kluwer Health.

Pramila-Savukoski, S., Kärnä, R., Kuivila, H., Juntunen, J., Koskenranta, M., Oikarainen, A., Mikkonen, K., 2023. The influence of digital learning on health sciences students' competence development– a qualitative study. Nurse Educ. Today 120, 105635. https://doi.org/10.1016/j.nedt.2022.105635.

Raes, A., 2022. Exploring student and teacher experiences in hybrid learning environments: does presence matter? Postdigital Sci. Educ. 4 (1), 138–159. https://doi.org/10.1007/s42438-021-00274-0.

Raes, A., Detienne, L., Windey, I., Depaepe, F., 2020. A systematic literature review on synchronous hybrid learning: gaps identified. Learn. Environ. Res. 23 (3), 269–290. https://doi.org/10.1007/s10984-019-09303-z.

Redecker, C., 2017. European Framework for the Digital Competence of Educators: DigCompEdu. Publications Office of the European Union, Luxembourg. Available at: https://publications.jrc.ec.europa.eu/repository/handle/JRC107466.

Saichaie, K., 2020. Blended, flipped, and hybrid learning: definitions, developments, and directions. New Dir. Teach. Learn. 2020 (164), 95–104. https://doi.org/10.1002/tl.20428.

Samson, P.J., 2020. Student behaviors in a blended synchronous course. J. Geosci. Educ. 68 (4), 324–333. https://doi.org/10.1080/10899995.2020.1768002.

United Nations, 2020. Policy Brief: Education during COVID-19 and beyond. Available at: https://unsdg.un.org/resources/policy-brief-education-during-covid-19-and-beyond.

United Nations Educational, Scientific and Cultural Organisation (UNESCO), 2020. International Commission on the Futures of Education. 2020. Education in a post-COVID world: Nine ideas for public action. Paris, UNESCO. Available at: https://en.unesco.org/sites/default/files/education_in_a_post-covid_world-nine_ideas_for_public_action.pdf.

Universities of Applied Sciences Act 1129/2014. Available at: https://www.finlex.fi/en/laki/kaannokset/2014/en20141129.pdf.

van der Vlies, R., 2020. Digital strategies in education across OECD countries: Exploring education policies on digital technologies. In: OECD Education Working Papers, No. 226. OECD Publishing, Paris. https://doi.org/10.1787/33dd4c26-en.

Wang, Q., 2021. Design for blended synchronous learning: the instructor's perspective. Int. J. Contin. Eng. Educ. Life-long Learn. 31 (3), 347–359. https://doi.org/10.1504/IJCEELL.2021.116007.

Wang, Q., Huang, C., 2018. Pedagogical, social and technical designs of a blended synchronous learning environment. Br. J. Educ. Technol. 49 (3), 451–462. https://doi.org/10.1111/bjet.12558.

World Health Organisation (WHO), 2016. Nurse Educator Core Competencies. Available at: https://www.who.int/publications/i/item/nurse-educator-core-competencies.

World Health Organisation (WHO), 2022a. Health and care workforce in Europe: time to act. WHO Regional Office for Europe. Available at: https://www.who.int/europe/publications/i/item/9789289058339.

World Health Organisation (WHO), 2022b. Global competency and outcomes framework for universal health coverage. Available at: https://www.who.int/publications/i/item/9789240034662.