Journal of Multidisciplinary Healthcare

Dovepress
open access to scientific and medical research

Open Access Full Text Article

ORIGINAL RESEARCH

Core Competencies for Interprofessional Collaborative Practice Among Teacher Education, Health and Social Care Students in a Large Scaled Blended Learning Course

Kari Almendingen [1]
Bente Sparboe-Nilsen [1]
Lisbeth Gravdal Kvarme [1]
Jurate Saltyte Benth [2,3]

[1]Department of Nursing and Health Promotion, Faculty of Health Sciences, OsloMet – Oslo Metropolitan University, Oslo, Norway; [2]Institute of Clinical Medicine, Campus Ahus, University of Oslo, Blindern, Norway; [3]Health Services Research Unit, Akershus University Hospital, Lørenskog, Norway

Introduction: Society's demands for better coordination of services for children are increasing. Interprofessional learning (IPL) has been suggested to achieve the triple aim of better services, better outcomes and reduced costs. The aims were to assess 1) to what extent students taking teacher education, health and social care programmes agreed that blended learning was a suitable approach in a mandatory IPL course, 2) to what extent they had learnt about the WHO's core IPL competencies (roles and responsibilities, values and ethics, interprofessional communication, and teams and teamwork), and 3) the students' ranking of the learning outcomes from different components of the IPL course.

Methods: This was a quantitative cross-sectional study. Students completed an online course evaluation after a two-day combination of online and face-to-face IPL small-group training.

Findings: The response rate was 25.8% (n=363). Among the students, 60.6% strongly agreed that blended learning was suitable, while 8.9% strongly disagreed. Among the respondents, 46.8%, 50.2%, 56.8% and 62.3% gained increased insight into roles and responsibilities, values and ethics, interprofessional communication, and teams and teamwork, respectively. In ascending order, students were most satisfied with the learning outcomes from the supervision (16.0%), the syllabus (28.6%), the submission assignment (42.4%), the digital learning content of Canvas (43.8%), the combination of everything (43.8%), and the IPL group discussions (78.6%). In stratified analyses, 'teacher education and child welfare students' were significantly more likely to gain better insight into the WHO competencies than "health and social care students", and they were also more overall satisfied.

Conclusion: Students agreed that blended learning was a suitable approach, although the learning outcomes from the face-to-face discussions were markedly higher than from other course components. While the majority had learnt something about the WHO competencies, the teacher and child welfare students achieved the best learning outcomes, including new knowledge about the WHO competencies.

Keywords: blended learning, interprofessional learning, health studies, social studies, teacher education, competencies

Correspondence: Kari Almendingen
Department of Nursing and Health Promotion, Faculty of Health Sciences, Oslo Metropolitan University, P.O. Box 4 St. Olavs plass, NO-0130, Oslo, Norway
Tel +47 90158165
Email kalmendi@oslomet.no

Plain Language Summary

- Rapid changes in the welfare service system require professional graduates to bring new knowledge to the working field, and professional candidates are potential agents of change for better practice in the services provided.

Received: 23 June 2021
Accepted: 27 July 2021
Published: 20 August 2021

- The learning outcomes and student satisfaction were markedly higher from face-to-face group discussions than from other components of the mandatory large-scale blended learning interprofessional course.
- This study supports early introduction of interprofessional learning, because knowledge and understanding of the four WHO interprofessional core competency domains (values and ethics; roles and responsibilities; interprofessional communication; and teams and teamwork) take time to develop.
- The insights generated from the present study may be helpful when designing pre-service interprofessional courses involving not only students taking health and social care study programmes, but also those taking teacher education programmes.

Introduction

There are no except number on how many children and young people who are living with a complex physical and/or mental health condition, nor of those who are growing up as relatives to parents or siblings who are sick, dying, imprisoned, etc. As such vulnerable children and young people enter adulthood, they may encounter more health challenges than those commonly associated with the transition into adult life.[1–3]

Educational achievement and completion of schooling are basic components of the healthy development of children and youths.[4,5] However, the school teachers need skills and expertise beyond the pedagogical to accommodate the diversity of pupils backgrounds and needs, and such expertise is currently lacking in teacher education.[4,6] Currently, students from education, health and social study programs, are mainly educated in educational trajectories which harbour different disciplinary professional identity, culture, tradition, syllabus[4] etc., all of which may act as barriers for professional collaboration and teamwork.

Interprofessional learning (IPL) is suggested to be an important pedagogical approach for achieving the triple aim of better services, better outcomes and reduced costs.[7–9] IPL is defined by the World Health Organization (WHO) as being present when students from two or more professions learn about, from and with each other in order to prepare them for interprofessional collaboration (IPC) and improve outcomes in the welfare services.[10,11] In response to the need for IPL, education associations from dentistry, medicine, nursing, osteopathic medicine, pharmacy, and public health formed the Interprofessional Education Collaborative (IPEC).[12] They developed 38 competencies for interprofessional practice in four domains: Values and Ethics, Roles and Responsibilities, Interprofessional Communication, and Teams and Teamwork.[12] To create a collaborative practice-ready workforce, health, social and educational professions educators must help students develop the knowledge, skills, attitudes, and behaviors relevant to the WHO core IPL competencies[7,11] well before these professionals enter childhood settings in the working field.[13,14] IPL must include interprofessional student groups working together in real-life situations, including situations that extends beyond everyday normal life, such as domestic violence, abuse, and deaths.[14–21] However, such issues and the WHO core IPL competencies are rarely addressed on the professional curricula.

One method for students to learn to function interprofessionally is through working in small IPL groups resembling IPC teams in specially prepared pre-service-training. Students may prepare themselves using the flipped classroom method ahead of participation in IPL groups.[22] Blended learning is a type of education in which students learn via electronic and online media as well as traditional face-to-face teaching.[23,24] Face-to-face interaction provides the foundation for social communication, which can be critical to online learning.[23] A case-based blended learning approach in small groups has been suggested to be a useful strategy for facilitating IPL since it integrates components of traditional face-to-face discussions with online learning.[8,23,25,26] However, IPL research is as yet mainly restricted to the field of health and social care,[13,27] and few published studies have examine outcomes related to the WHO core IPL competencies.[7] Additionally, there is a knowledge gap concerning potential differences in learning outcomes from IPL courses that include students not only from health and social care programmes, but also students from teacher educations and child welfare.

The aims of this study were to assess 1) to what extent the pre-service students taking teacher education, health and social care programmes agreed that blended learning was a suitable approach in a large-scale mandatory IPL course, 2) to what extent they had learnt about the WHO's core IPL competencies, and 3) the students' ranking of the learning outcomes from different components of the blended learning course.

Materials and Methods

Setting

During 6 and 7 January 2020, a large-scale mandatory IPL training course was held within the framework of the Interprofessional Interaction with Children and Youth

(INTERACT) project[28] at Oslo Metropolitan University (OsloMet) in Norway. The IPL course was designed for bachelor students taking health, social care and teacher education study programmes.[29] The aim of INTERACT is to meet society's demand for better coordination of services relating to children and young people, involving better interaction between professionals and better cooperation between children, young people and their families, and the professionals.

Students

The first year bachelor students were enrolled in the following study programmes (n=1410): Early Childhood Education (n=250), Primary and Lower Secondary Teacher Education (n=380), Teacher Education in Art and Design (n=60), Physiotherapy (n=150), Mensendieck Physiotherapy (n=85), Nursing (n=160), Social Work (n=150), Child Welfare (n=90) and Occupational Therapy (n=85). The nursing students were based at the Kjeller campus (20 km outside Oslo city), while the others were based at the Pilestredet campus in Oslo city. The enrolled students were divided into pre-defined IPL groups each consisting of eight students representing health, social care and teacher education programmes.

Blended Small-Group Learning Course

The INTERACT project and the development of the large-scale blended learning IPL course is described in detail elsewhere.[28] The required coursework included participation in a two-day seminar (working in the IPL groups only) and the submission of an IPL group assignment. The seminar days were structured as a combination of face-to-face IPL group discussions and the use of digital learning materials provided by the learning management system (LMS) Canvas. The latter included case-based learning material (produced by user organisations, employers and public authorities) and mini-lectures (produced by staff et al from the working field). The group assignment aimed to link the seminar days, coursework assignments and the syllabus, and could be submitted in the form of an academic text, a podcast or a video. The supervisors, who were recruited from among the staff, master students and professionals working in the field, visited the IPL groups during the second day of the seminars. The supervisor either approved or failed the groups' coursework and provided each group with feedback on their assignments. The digital content was available through LMS Canvas from mid-December 2019, so that the students could voluntarily prepare themselves before the IPL course.[30] The provision of the 2020 IPL course was repeated on the basis of the 2019 IPL course, and the course's development and provision are described in detail elsewhere.[22,31]

Online Evaluation Survey

Students were invited to complete a specially prepared online student-evaluation questionnaire after the course. In the questionnaire, most of the questions were identical to those in the survey from 2019,[22] except for additional questions about the WHO's four interprofessional core competencies; values and ethics, roles and responsibilities, interprofessional communication, and teams and teamwork and a few more questions regarding the blended learning approach. The questionnaire was provided as an internet link embedded in LMS Canvas. One reminder was sent. The responses were scored on a scale from 0 ("completely disagree") to 5 ("completely agree").

Data Analysis

The data were presented as frequencies and percentages. The share of students "strongly/completely agreeing" (score 4/5) and share of students "strongly/completely disagreeing" (score 1/0) on various items of questionnaire was presented. For the stratified analyses, the age was dichotomized to less than 25, or 25 years or older, and study programme to "teacher education and child welfare" consisting of Early Childhood Education and Care; Primary and Lower Secondary Teacher Education; Child Welfare; and Teacher Education in Art and Design, since they only target children and young people as end users, and "health and social care" consisting of Physiotherapy; Mensendieck Physiotherapy; Nursing; Social Work; and Occupational Therapy, as they target all age groups as end users. The association between the students' answers on scale 0–5 and dichotomized age and study programme was assessed by using a χ^2-test. As post hoc analyses, the χ^2-test was applied to assess the differences between the groups defined by age and study programmes and share of students "strongly/completely agreeing". All tests were two-sided, and results with p-values of <0.05 were considered statistically significant. No adjustment was made for multiple hypothesis testing due to the exploratory nature of the study. The statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) v25.

Ethics

Ethical Guidelines for Research at Oslo Metropolitan University (OsloMet) were followed.[32] Further, the study was discussed with the Norwegian Centre for Research Data (NSD),[33] and they replied that it was unnecessary to report the study to them since if it was completely anonymous and no sociodemographic information beyond the participants' age and gender was collected, as was the case in the current study (NSD reference number 741649). None of the participants were under the age of 18 years. The data were collected through an anonymous web survey using "Nettskjema",[34] in line with ethical guideline.[32] The participants were provided written information about the study on beforehand in LMS Canvas. The voluntariness and anonymity of the participants were emphasized, and the participants were informed about the purpose of the study and how the data would be used. Answering the questionnaire was considered informed consent to participate. The study complies with the Declaration of Helsinki.

Findings

Students (n=363) from all of the included study programmes answered the evaluation questionnaire, with a response rate of 25.8% (Table 1). More than two-thirds (77.3%) of the respondents were under the age of 25. Fifty-four percent of the students were taking teacher education and child welfare study programmes, and 46.0% were taking health and social care study programmes.

Table 1 Distribution of Respondents' Age and Study Programme Affiliation on a Large-Scale Blended IPL Course, N (%)

Variable	Students (N=363)
Age	
21 years or younger	205 (56.8)
22–24 years	74 (20.5)
25–27 years	34 (9.4)
28 years or older	48 (13.3)
Study programme	
Nursing	35 (9.6)
Physiotherapy	29 (8.0)
Mensendieck Physiotherapy	18 (5.0)
Teacher Education[a]	92 (25.3)
Early Childhood Education	69 (19.0)
Occupational Therapy	16 (4.4)
Child Welfare	35 (9.6)
Social Work	46 (12.7)
Teacher Education in Art and Design	23 (6.3)
Age	
<25 years	279 (77.3)
25 years or older	82 (22.7)
Study programmes	
Health and social care[b]	167 (46.0)
Teaching and child welfare[c]	196 (54.0)

Notes: [a]Primary and Lower Secondary Teacher Education; [b]Physiotherapy, Mensendieck Physiotherapy, Nursing, Social Work and Occupational Therapy; [c]Early Childhood Education and Care, Primary and Lower Secondary Teacher Education, Child Welfare, and Teacher Education in Art and Design.

Evaluation of Blended Small-Group Learning as a Learning Approach

In ascending order, students were most satisfied ("strongly/completely agree") with the learning outcomes from the supervision (16.0%), the syllabus (28.6%), the submission assignment (42.4%), the digital learning content of Canvas (43.8%), the combination of everything (43.8%), and the group discussions during the seminar days (78.6%) (Table 2). The findings did not differ according to age or study programme (data not shown).

Among all students, 60.6% agreed that blended learning was a good approach for this large-scale IPL course (Table 3). In contrast, only 8.9% disagreed with this statement. Among the students, 49.1% agreed that blended learning was better than traditional plenary lectures, while 15.7% disagreed with this statement. Only 7.7% agreed while 73.3% disagreed that the learning outcomes would have been higher if the group discussions had been virtual instead of face-to-face.

The vast majority of students (83.4%) agreed that the collaboration in the IPL groups was good, and only 2.8% disagreed. Less than 10.0% disagreed that the learning objectives were clear, that there was a clear relationship between the learning objectives and assignments, that the digital content in LMS was well organised, and that the learning resources, syllabus and discussions were relevant. In contrast, 35.6% disagreed that the supervision was relevant, 27.2% disagreed that the practical organisation on campus was good and 44.9% disagreed that the information provided ahead of the IPL course was good.

In the analyses stratified by age (76.7% were below 25 years), there were no significant associations between the overall students' responses and age (data not shown). However, post hoc analyses showed, that younger students agreed to a lesser extent than older students that the syllabus was relevant (40.1% vs 52.4%, respectively, p=0.048), but to a larger extent that the learning approach worked well (63.4% vs 51.2%, respectively, p=0.046). In contrast, students attending the teacher education and child welfare study programmes

Table 2 Distribution of Responses to Statements for the Whole Group (N=363) After the Large-Scale Blended IPL Course (on a Scale from 0 to 5, State How Much You Agree or Disagree with the Following Statements, Where 0 Means "Completely Disagree" and 5 Means "Completely Agree"), N (%)

	Scores					
Question: What Do You Think Gave the Highest Learning Outcomes?	**0**	**1**	**2**	**3**	**4**	**5**
The digital learning material in Canvas	16 (4.4)	23 (6.3)	51 (14.0)	114 (31.4)	124 (34.2)	35 (9.6)
The IPL group discussions	7 (1.9)	8 (2.2)	19 (5.2)	44 (12.1)	116 (32.0)	169 (46.6)
The syllabus	30 (8.3)	35 (9.6)	78 (21.5)	116 (32.0)	81 (22.3)	23 (6.3)
The submission assignment	22 (6.1)	32 (8.8)	57 (15.7)	98 (27.0)	115 (31.7)	39 (10.7)
The supervision	86 (23.7)	74 (20.4)	70 (19.3)	75 (20.7)	41 (11.3)	17 (4.7)
The combination of everything	14 (3.9)	21 (5.8)	40 (11.0)	129 (35.5)	114 (31.4)	45 (12.4)

Notes: Adapted from Almendingen K, Molin M, Šaltytė Benth J. Large-scale blended learningdesign in an undergraduate interprofessional course in norway:students' perspectives from an exploratory study. J Res Interprof Pract 605Educ. 2021;11(1):1–26[22] and Almendingen K, Saltyte-Benth J, Molin M, Almendingen K,Šaltytė BJ, Molin M. 'Large scale blended learning design in aninterprofessional undergraduate course in Norway: context descrip- 625tion and supervisors' perspective. MedEdPublish. 2021;10 (162).[28]

Table 3 Distribution of Responses to Statements for the Whole Group (N=363) After the Large-Scale Blended IPL Course (on a Scale from 0 to 5, State How Much You Agree or Disagree with the Following Statements, Where 0 Means "Completely Disagree" and 5 Means "Completely Agree"), N (%)

	Scores					
Question: After Completing the IPL Course, to What Extent Do You Feel That:	**0**	**1**	**2**	**3**	**4**	**5**
- the information ahead of the IPL course was good?	81 (22.3)	82 (22.6)	79 (21.8)	63 (17.4)	36 (9.9)	22 (6.1)
- the practical organisation on campus was good?	51 (14.0)	48 (13.2)	70 (19.3)	80 (22.0)	80 (22.0)	34 (9.4)
- the digital academic content was well organised in LMS?	16 (4.4)	19 (5.2)	46 (12.7)	92 (25.3)	108 (29.8)	82 (22.6)
- the learning objectives were clear?	8 (2.2)	27 (7.4)	34 (9.4)	93 (25.6)	111 (30.6)	90 (24.8)
- there was a clear relation between learning objectives and the assignment?	11 (3.0)	20 (5.5)	44 (12.1)	90 (24.8)	130 (35.8)	68 (18.7)
- the digital learning resources were relevant?	12 (3.3)	19 (5.2)	51 (14.0)	93 (25.6)	129 (35.5)	59 (16.3)
- the group discussions were relevant?	15 (4.1)	16 (4.4)	30 (8.3)	79 (21.8)	131 (36.1)	92 (25.3)
- the assignment for submission was relevant?	22 (6.1)	21 (5.8)	42 (11.6)	89 (24.5)	110 (30.3)	79 (21.8)
- the syllabus was relevant?	18 (5.0)	17 (4.7)	55 (15.2)	118 (32.5)	104 (28.7)	51 (14.0)
- the supervision was relevant?	75 (20.7)	54 (14.9)	66 (18.2)	88 (24.2)	51 (14.0)	29 (8.0)
- the IPL group teamwork was relevant?	2 (0.6)	8 (2.2)	12 (3.3)	38 (10.5)	76 (20.9)	227 (62.5)
- the large-scale blended learning approach worked well?	14 (3.9)	18 (5.0)	41 (11.3)	70 (19.3)	129 (35.5)	91 (25.1)
- the blended learning approach worked better than plenary lectures?	34 (9.4)	23 (6.3)	45 (12.4)	83 (22.9)	91 (25.1)	87 (24.0)
- the learning outcomes have been higher from virtual groups?	191 (52.6)	75 (20.7)	41 (11.3)	28 (7.7)	19 (5.2)	9 (2.5)
- you had familiarised yourself with the digital contents ahead of course?	47 (12.9)	33 (9.1)	67 (18.5)	87 (24.0)	69 (19.0)	60 (16.5)

Notes: Adapted from Almendingen K, Molin M, Šaltytė Benth J. Large-scale blended learningdesign in an undergraduate interprofessional course in norway:students' perspectives from an exploratory study. J Res Interprof Pract 605Educ. 2021;11(1):1–26[22] and Almendingen K, Saltyte-Benth J, Molin M, Almendingen K,Šaltytė BJ, Molin M. 'Large scale blended learning design in aninterprofessional undergraduate course in Norway: context descrip- 625tion and supervisors' perspective. MedEdPublish. 2021;10 (162).[28]

showed a significant tendency towards higher degree of agreement that the content in LMS Canvas (p=0.004) was well organised, and that the learning resources (p=0.004), assignment (p=0.003), syllabus (p=0.002) and discussions (p=0.014) were relevant, when compared to the health and social care students (Table 4). However, these students were only significantly more agreeing than health and social care students that the group discussions were relevant (66.3% vs 55.7%, p=0.038). Moreover, they tended to be more satisfied with the collaboration in the IPL groups (p=0.007 for association), even though the shares of students agreeing did not differ significantly.

WHO's Core Competencies – Had the Students Gained New Academic Insight?

Among the students who responded to the questionnaire, 57.8% agreed that they had gained better academic insight into their own professional role (Table 5). In

Table 4 Distribution of Responses to the Various Questions Between Students Taking the Different Study Programmes, N (%)

Question	0	1	2	3	4	5	p-value[a]
The information ahead of the IPL course was good							
Health and social care	31 (18.6)	39 (23.4)	33 (19.8)	35 (21.0)	17 (10.2)	12 (7.2)	0.349
Teacher and child welfare	50 (25.5)	43 (21.9)	46 (23.5)	28 (14.3)	19 (9.7)	10 (5.1)	
The practical organisation on campus was good							
Health and social care	27 (16.2)	23 (13.8)	34 (20.4)	33 (19.8)	35 (21.0)	15 (9.0)	0.823
Teacher and child welfare	24 (12.2)	25 (12.8)	36 (18.4)	47 (24.0)	45 (23.0)	19 (9.7)	
The academic content in LMS was well organised							
Health and social care	12 (7.2)	9 (5.4)	28 (16.8)	30 (18.0)	46 (27.5)	42 (25.1)	**0.004**
Teacher and child welfare	4 (2.0)	10 (5.1)	18 (9.2)	62 (31.6)	62 (31.6)	40 (20.4)	
The learning objectives were clear							
Health and social care	5 (3.0)	19 (11.4)	13 (7.8)	39 (23.4)	45 (26.9)	46 (27.5)	0.050
Teacher and child welfare	3 (1.5)	8 (4.1)	21 (10.7)	54 (27.6)	66 (33.7)	44 (22.4)	
There was a clear relation between learning objectives and assignments							
Health and social care	9 (5.4)	10 (6.0)	20 (12.0)	38 (22.8)	56 (33.5)	34 (20.4)	0.205
Teacher and child welfare	2 (1.0)	10 (5.1)	24 (12.2)	52 (26.5)	74 (37.8)	34 (17.3)	
The digital learning resources were relevant							
Health and social care	9 (5.4)	15 (9.0)	25 (15.0)	33 (19.8)	60 (35.9)	25 (15.0)	**0.004**
Teacher and child welfare	3 (1.5)	4 (2.0)	26 (13.3)	60 (30.6)	69 (35.2)	34 (17.3)	
The group discussions were relevant							
Health and social care	12 (7.2)	12 (7.2)	15 (9.0)	35 (21.0)	55 (32.9)	38 (22.8)	**0.014**
Teacher and child welfare	3 (1.5)	4 (2.0)	15 (7.7)	44 (22.4)	76 (36.8)	54 (27.6)	
The assignment for submission was relevant							
Health and social care	16 (9.6)	14 (8.4)	21 (12.6)	46 (27.5)	38 (22.8)	32 (19.2)	**0.003**
Teacher and child welfare	6 (3.1)	7 (3.6)	21 (10.7)	43 (21.9)	72 (36.7)	47 (24.0)	
The syllabus was relevant							
Health and social care	14 (8.4)	12 (7.2)	27 (16.2)	45 (26.9)	52 (31.1)	17 (10.2)	**0.002**
Teacher and child welfare	4 (2.0)	5 (2.6)	28 (14.3)	73 (37.2)	52 (26.5)	34 (17.3)	
The supervision was relevant							
Health and social care	41 (24.6)	28 (16.8)	28 (16.8)	40 (24.0)	21 (12.6)	9 (5.4)	0.264
Teacher and child welfare	34 (17.3)	26 (13.3)	38 (19.4)	48 (24.5)	30 (15.3)	20 (10.2)	
The IPL group collaboration was relevant							
Health and social care	2 (1.2)	6 (3.6)	9 (5.4)	16 (9.6)	43 (25.7)	91 (54.5)	**0.007**
Teacher and child welfare	0	2 (1.0)	3 (1.5)	22 (11.2)	33 (16.8)	136 (69.4)	
The large-scale blended learning approach worked well							
Health and social care	8 (4.8)	9 (5.4)	24 (14.4)	30 (18.0)	55 (32.9)	41 (24.6)	0.506
Teacher and child welfare	6 (3.1)	9 (4.6)	17 (8.7)	40 (20.4)	74 (37.8)	50 (25.5)	

(*Continued*)

Table 4 (Continued).

Question	0	1	2	3	4	5	p-value[a]
The blended learning approach triumphs plenary lectures							
Health and social care Teacher and child welfare	15 (9.0) 19 (9.7)	13 (7.8) 10 (5.1)	18 (10.8) 27 (13.8)	31 (18.6) 52 (26.5)	46 (27.5) 45 (23.0)	44 (26.3) 43 (21.9)	0.335
The learning outcomes would have been higher from virtual groups							
Health and social care Teacher and child welfare	87 (52.1) 104 (53.1)	37 (22.2) 38 (19.4)	20 (12.0) 21 (10.7)	12 (7.2) 16 (8.2)	8 (4.8) 11 (5.6)	3 (1.8) 6 (3.19)	0.936
You had flipped the classroom							
Health and social care Teacher and child welfare	16 (9.6) 31 (15.8)	16 (9.6) 17 (8.7)	36 (21.6) 31 (15.8)	35 (21.0) 52 (26.5)	33 (19.8) 36 (18.4)	31 (18.6) 29 (14.8)	0.266

Notes: [a]p-value for χ^2-test for association between students' answers and study programme. Adapted from Almendingen K, Molin M, Šaltytė Benth J. Large-scale blended learningdesign in an undergraduate interprofessional course in norway:students' perspectives from an exploratory study. J Res Interprof Pract 605Educ. 2021;11(1):1–26[22] and Almendingen K, Saltyte-Benth J, Molin M, Almendingen K,Šaltytė BJ, Molin M. 'Large scale blended learning design in aninterprofessional undergraduate course in Norway: context descrip- 625tion and supervisors' perspective. MedEdPublish. 2021;10(162).[28]

Table 5 Distribution of Responses to Statements for the Whole Group (N=363) After the Large-Scale Blended IPL Course (on a Scale from 0 to 5, State How Much You Agree or Disagree with the Following Statements, Where 0 Means "Completely Disagree" and 5 Means "Completely Agree"), N (%)

	Scores					
Question: To What Extent Do You Feel That the IPL Course Has Given You Better Academic Insight into:	**0**	**1**	**2**	**3**	**4**	**5**
- your own future professional role?	29 (8.0)	40 (11.0)	40 (11.0)	104 (28.7)	105 (28.9)	45 (28.9)
- other professional roles/programmes?[a]	9 (2.5)	16 (4.4)	33 (9.1)	95 (26.2)	140 (38.6)	70 (19.3)
- interprofessional collaboration?	14 (3.9)	19 (5.2)	46 (12.7)	89 (24.5)	128 (35.3)	67 (18.5)
- values and ethics?[b]	18 (5.0)	26 (7.2)	31 (8.5)	106 (29.2)	127 (35.0)	55 (15.2)
- roles and responsibilities?	11 (3.0)	31 (8.5)	38 (10.5)	113 (31.1)	119 (32.8)	51 (14.0)
- interprofessional communication?	13 (3.6)	23 (6.3)	31 (8.5)	90 (24.8)	136 (37.5)	70 (19.3)
- teams and teamwork?	10 (2.8)	11 (3.0)	33 (9.1)	83 (22.9)	119 (32.8)	107 (29.5)
- observation as a method?	18 (5.0)	21 (5.8)	48 (13.2)	112 (30.9)	99 (27.3)	65 (17.9)
- new relevant research findings?	34 (9.4)	45 (12.4)	84 (23.1)	112 (30.9)	66 (18.2)	22 (6.1)
- new aspects of the topic that you were not familiar with?	22 (6.1)	22 (6.1)	52 (14.3)	106 (29.2)	95 (26.2)	66 (18.2)

Notes: [a]Limited to the teacher education, social care and health study programmes; [b]The four interprofessional core competencies: the topics of values and ethics, roles and responsibilities, interprofessional communication, and teams and teamwork. Adapted from Almendingen K, Molin M, Šaltytė Benth J. Large-scale blended learningdesign in an undergraduate interprofessional course in norway:students' perspectives from an exploratory study. J Res Interprof Pract 605Educ. 2021;11(1):1–26[22] and Almendingen K, Saltyte-Benth J, Molin M, Almendingen K,Šaltytė BJ, Molin M. 'Large scale blended learning design in aninterprofessional undergraduate course in Norway: context descrip-625tion and supervisors' perspective. MedEdPublish. 2021;10(162).[28]

contrast, 19.0% disagreed that they had been given such insight. Likewise, 57.9% agreed that they had gained better academic insight into other professional roles, whereas 6.9% disagreed. Fewer than 11.0% responded that they disagreed that they had gained better academic insight into observation as a method. Regarding the WHO's four interprofessional core competencies, 50.2%, 46.8%, 56.8% and 62.3%, respectively, agreed that the course had given them increased academic insight into values and ethics, roles and responsibilities, interprofessional communication, and teams and teamwork, respectively. For 67.2% of the students, the seminar days were considered relevant to professional practice.

Students below 25 years tended towards more likely to agree that the seminar days gave them better academic insight into their own future professional role (p=0.007), with 46.2% completely or strongly agreeing as compared to 25.6% among older students (p=0.001). They were also overall more likely to be satisfied with their learning of

Table 6 Distribution of Responses to the Various Questions Between Students Taking the Different Study Programmes, N (%)

Question	0	1	2	3	4	5	p-value[a]
Your own future professional role							
Health and social care Teacher and child welfare	21 (12.6) 8 (4.1)	28 (16.8) 12 (6.1)	24 (14.4) 16 (8.2)	47 (28.1) 57 (29.1)	32 (19.2) 73 (37.2)	15 (9.0) 30 (15.3)	**<0.001**
Other professional roles/programmes							
Health and social care Teacher and child welfare	6 (3.6) 3 (1.5)	9 (5.4) 7 (3.6)	15 (9.0) 18 (9.2)	47 (28.1) 48 (24.5)	54 (32.3) 86 (43.9)	36 (21.6) 34 (17.3)	0.250
Interprofessional collaboration							
Health and social care Teacher and child welfare	10 (6.0) 4 (2.0)	14 (8.4) 5 (2.6)	22 (13.2) 24 (12.2)	41 (24.6) 48 (24.5)	47 (28.1) 81 (41.3)	33 (19.8) 34 (17.3)	**0.014**
Values and ethics							
Health and social care Teacher and child welfare	12 (7.2) 6 (3.1)	14 (8.4) 12 (6.1)	15 (9.0) 16 (8.2)	45 (26.9) 61 (31.1)	56 (33.5) 71 (36.2)	25 (15.0) 30 (15.3)	0.475
Roles and responsibilities							
Health and social care Teacher and child welfare	6 (3.6) 5 (2.6)	20 (12.0) 11 (5.6)	21 (12.6) 17 (8.7)	50 (29.9) 63 (32.1)	53 (31.7) 66 (33.7)	17 (10.2) 34 (17.3)	0.092
Interprofessional collaboration communication							
Health and social care Teacher and child welfare	10 (6.0) 3 (1.5)	14 (8.4) 9 (4.6)	17 (10.2) 14 (7.1)	42 (25.1) 48 (24.5)	55 (32.9) 81 (41.3)	29 (17.4) 41 (20.9)	0.067
Teams and teamwork							
Health and social care Teacher and child welfare	7 (4.2) 3 (1.5)	8 (4.8) 3 (1.5)	20 (12.0) 13 (6.6)	33 (19.8) 50 (25.5)	57 (34.1) 62 (31.6)	42 (25.1) 65 (33.2)	**0.038**
Observation as a method							
Health and social care Teacher and child welfare	9 (5.4) 9 (4.6)	12 (7.2) 9 (4.6)	19 (11.4) 29 (14.8)	49 (29.3) 63 (32.1)	53 (31.7) 46 (23.5)	25 (15.0) 40 (20.4)	0.312
New research findings							
Health and social care Teacher and child welfare	16 (9.6) 18 (9.2)	26 (15.6) 19 (9.7)	42 (25.1) 42 (21.4)	44 (26.3) 68 (34.7)	33 (19.8) 33 (16.8)	6 (3.6) 16 (8.2)	0.125
New aspects of the topic that you were not familiar with							
Health and social care Teacher and child welfare	14 (8.4) 8 (4.1)	9 (5.4) 13 (6.6)	22 (13.2) 30 (15.3)	44 (26.3) 62 (31.6)	47 (28.1) 48 (24.5)	31 (18.6) 35 (17.9)	0.464

Notes: [a]p-value for χ^2-test for association between students' answers and study programme. Adapted from Almendingen K, Molin M, Šaltytė Benth J. Large-scale blended learningdesign in an undergraduate interprofessional course in norway:students' perspectives from an exploratory study. J Res Interprof Pract 605Educ. 2021;11(1):1–26[22] and Almendingen K, Saltyte-Benth J, Molin M, Almendingen K,Šaltytė BJ, Molin M. 'Large scale blended learning design in aninterprofessional undergraduate course in Norway: context descrip- 625tion and supervisors' perspective. MedEdPublish. 2021;10(162).[28]

observation as a method (p=0.006), with 48.7% agreeing as compared to 32.9% among older students (p=0.011).

The teacher education and child welfare students tended to report that the seminar days gave them better academic insight into their own future professional role (p<0.001, 52.6% vs 28.1 agreed (p<0.001)) and that they had learnt about IPC (p=0.014, 47.9% vs 58.7% agreed (p=0.040)) and teams (p=0.038), however, the later with no significant difference regarding the share of agreeing (59.3% vs 64.8%). No other associations between overall students' answers and education programme were found (Table 6), though the share of agreeing with

"Interprofessional communication" was significantly higher among the teacher education and child welfare students (62.2% vs 50.3%, p=0.022).

Discussion

These students had positive perceptions of the blended learning approach in the large-scale IPL course, although few of them had prepared themselves ahead of the course through the digital resources available. The students agreed that the course had given them some academic insight into the WHO's core competencies. The highest learning outcome was, however, reported from the face-to-face IPL group discussions, and not from the digital learning material. Approximately three-quarters of the students disagreed that virtual groups would had led to better learning outcomes than face-to-face group discussions, which is consistent with the overall high satisfaction with the face-to-face IPL group discussions. Notably, the teacher and child welfare students were overall more satisfied and reported a higher learning outcome than the health and social care students, which suggests a potential for IPL course improvement.

Although most students reported having learned something about the WHO's four interprofessional core competencies, the teacher and child welfare students were more likely to report that they had gained better academic insight into their own future professional role, IPC and teams and teamwork. In our previously published study, the majority of the IPL students had learned about their own future role.[22] In contrast, less than 20% had learned about other roles.[31] A successful IPL has been found to include all involved students' awareness of both their own and others' professional identity and professional roles.[35] While all the students will be familiar with the "teacher role" from growing up, fewer students will be familiar with the health and social services. This skewness might have affected our results, but for ethical reasons, we did not ask these young students about their prior private experience with health and social care settings. The teacher education and child welfare students are also more familiar with children and young people as a user group, which may explain why these students to a significantly higher degree agreed that the learning resources, assignment, syllabus and discussions were relevant. The health and social care students were overall less satisfied than the teacher education and child welfare students. Further analyses into the different specialities were not considered relevant in this IPL study. The limited number of respondents in several of the different specialties would also have resulted in low reduced statistical power in such analyses. In the working field, IPC can be challenging as different professions have different educational and professional cultures and varying approaches to dealing with challenges.[4] Mandatory digital preparation ahead of participation (flipped classroom) may even out some of the academic differences between the different educational groups in future courses, in addition to more active use of real-life cases relevant to all professions (for example hospitalised children). IPL has become a mandatory part of health and social care programmes (such as physiotherapy, Mensendieck Physiotherapy, nursing, social work, child welfare and occupational therapy) in Norway from the academic year 2020/2021.[36] The present study is supportive of the new national requirements in Norway, which make IPL/interdisciplinary teams a requirement in profession-oriented bachelor's programmes.[6,36] In Norwegian teacher education programmes, priority is given to three interdisciplinary themes: democracy and citizenship, sustainable development, and public health and well-being.[6] Learning and training in an interprofessional group pre-service is however not the same thing as functioning interprofessionally in real life settings.[7] This study suggests that the different student groups most likely were not equally prepared for later IPC, as measured by their self-reported attained WHO's four interprofessional core competencies. Our study therefore support that an early introduction of IPL in pre-service training is important, because successful IPC requires knowledge and understanding of the four WHO core competency domains,[37] which take time to develop.

In descending order, students were most satisfied with the learning outcomes from the IPL group discussions on campus, the combination of everything, the digital learning content of LMS Canvas, the submission assignment, the syllabus, and the supervision. These findings did not differ according to age or study programme, and are in line with the results from our previous study[22] and the results from other comparable studies.[38,39] Learning is an active subjective process that takes place through activity and reflection, and not through students passively receiving theoretical knowledge.[40] Our data is supportive of the opinion that when students meet synchronously, time should be used actively, not passively.[30] The present data reflect the opinions of a high volume and diversity of professional students only a few weeks ahead of the national lockdown in Norway due to the COVID-19 pandemic.[41] Although student active learning methods and digitalised learning material might have been applied to a minor extent in some of the nine included pre-service training programmes,

these first-year bachelor students had limited experience of a digital transition at our university before the pandemic.[42] This IPL course using blended learning was thus a completely new learning experience for these students. The lack of prior experience with digital learning material and the flipped classroom[30] might be an explanation for why few students came prepared and informed to the IPL groups. Nevertheless, these data support blended learning as an approach in large scaled IPL studies.

The present study has some limitations, and several strengths. The cross-sectional study design does not help to determine cause and effect and cannot be used to analyse behaviour over a period of time. The response rate was low, but in line with the fact that the response rate to surveys in general is declining, which threatens the validity and generalisability of findings.[43,44] A high response rate is, however, no guarantee of sample quality. Self-selection bias may threaten internal validity, but the diversity in our sample enhances the robustness of the findings. The validated Norwegian version of ICCAS (measuring students' self-reported IPC competencies) was published after the present course was completed,[45] and was not therefore available for the present study. Major study strengths include the large heterogeneous sample size, and anonymous data collection. Students from all of the nine different study programmes included in the study contributed. Moreover, an external statistician was responsible for the statistical analysis. The present results are in line with the results from our previous study,[22] and since the provision of the present 2020 IPL course was repeated on the basis of the 2019 IPL course, this adds strength to our conclusions. To the best of our knowledge, no comparable large-scale quantitative IPL study was timed so closely to the Corona lockdown of campuses in Norway, that investigated learning outcomes and student satisfaction relevant to (post) pandemic IPL courses. Moreover, we are not aware of any other studies that evaluate aspects of digitalisation and IPL that include students from both teacher education, and health and social care study programmes.

Conclusions

In conclusion, the blended learning approach was positively evaluated, but the students' perceived learning outcomes from the IPL face-to-face group discussions were markedly higher than from other components of the blended learning course. All of the students had to some extent increased their knowledge related to the WHO's four interprofessional core competencies. However, the teacher education and child welfare students were generally more satisfied than the health and social care students, and they also reported that they had gained more insight into the WHO core competencies.

Data Sharing Statement

The data can be obtained from the corresponding author upon reasonable request.

Ethics Approval and Informed Consent

Ethical Guidelines for Research at Oslo Metropolitan University (OsloMet) were followed.[32] Permission to conduct the study was obtained from the project leader. Since the study is completely anonymous and no sociodemographic information beyond the participants' age and gender was collected, this research was exempt from approval from review and approval by an institutional review board or institutional ethics committee. Further, the study was discussed with the Norwegian Centre for Research Data (NSD),[33] and they replied that it was unnecessary to report the study to them since if it was completely anonymous and no sociodemographic information beyond the participants' age and gender was collected, as was the case in the current study (NSD reference number 741649). None of the participants were under the age of 18 years. The data were collected through an anonymous web survey using "Nettskjema",[34] in line with ethical guideline.[32] The participants were provided written information about the study on beforehand in LMS Canvas. The voluntariness and anonymity of the participants were emphasized, and the participants were informed about the purpose of the study and how the data would be used. Answering the questionnaire was considered informed consent to participate. The study complies with the Declaration of Helsinki.

Acknowledgments

We firstly wish to thank the participants. We also wish to thank the academic and administrative staff at Oslo Metropolitan University for their contributions to this work, the Steering group, the Academic Council, the External Reference Group, the Working Group and DIGIN. A special thanks to Head of Studies Torhild Skotheim (Project manager INTERACT) and Ellen Merethe Magnus (Administrative manager INTERACT) with the data collection.

Funding

This study was funded by internal funding from OsloMet. The funders had no role in study design, data collection

and analysis, decision to publish, or preparation of the manuscript.

Disclosure

The authors report no conflicts of interest in this work.

References

1. Knutsson S, Enskär K, Andersson-Gäre B, Golsäter M. Children as relatives to a sick parent: healthcare professionals' approaches. *Nordic J Nurs Res*. 2016;37(2):61–69. doi:10.1177/2057158516662538
2. Norway TOfCi. NHRI report to Norway's fifth and sixth periodic report to the UN Committee on the rights of the child. The UN convention on the rights of the child; 2017. Available from: http://barneombudet.no/wp-content/uploads/2017/10/The-Ombudsman-for-Children-in-Norway-Supplementary-Report-to-UN-2017.pdf. Accessed October 03, 2019.
3. Norwegian Society of Pediatricians. Child healthcare atlas for Norway. An overview and analysis of publicly funded somatic health services for children (0–16 years) in Norway in the period 2011–2014. Ministry of Health and Care Services and Northern Norway Regional Health Authority; 2017. Available from: https://helseatlas.no/sites/default/files/child-healthcare-atlas.pdf. Accessed November 17, 2019.
4. Borg E, Drange I. Interprofessional collaboration in school: effects on teaching and learning. *Improv Schools*. 2019;22(3):251–266. doi:10.1177/1365480219864812
5. Morrison FJ, Kim MH, Connor CM, Grammer JK. The causal impact of schooling on children's development: lessons for developmental science. *Curr Dir Psychol Sci*. 2019;28(5):441–449. doi:10.1177/0963721419855661
6. Ministry of Education and Research. The school of the future: renewal of subjects and competences. Official Norwegian Reports NOU. 2015: 8.
7. Sevin AM, Hale KM, Brown NV, McAuley JW. Assessing interprofessional education collaborative competencies in service-learning course. *Am J Pharm Educ*. 2016;80(2):32. doi:10.5688/ajpe80232
8. Djukic M, Adams J, Fulmer T, et al. E-learning with virtual teammates: a novel approach to interprofessional education. *JInterprof Care*. 2015;29(5):476–482. doi:10.3109/13561820.2015.1030068
9. van Diggele C, Roberts C, Haq I. Optimising student-led interprofessional learning across eleven health disciplines. *BMC Med Educ*. 2021;21(1):157. doi:10.1186/s12909-021-02527-9
10. Reeves S, Fletcher S, Barr H, et al. A BEME systematic review of the effects of interprofessional education: BEME Guide No. 39. *Med Teach*. 2016;38(7):656–668. doi:10.3109/0142159X.2016.1173663
11. WHO. *Framework for Action on Interprofessional Education & Collaborative Practice*. Geneva, Switzerland: WHO Press; 2010.
12. Interprofessional Education Collaborative Expert Panel. *Core Competencies for Interprofessional Collaborative Practice: Report of an Expert Panel*. Interprofessional Education Collaborative Expert Panel; 2011.
13. Anderson EM. Preparing the next generation of early childhood teachers: the emerging role of interprofessional education and collaboration in teacher education. *J Early Childhood Teach Educ*. 2013;34(1):23–35. doi:10.1080/10901027.2013.758535
14. Barnard-Brak L, Stevens T, Carpenter J. Care coordination with schools: the role of family-centered care for children with special health care needs. *Matern Child Health J*. 2017;21(5):1073–1078. doi:10.1007/s10995-016-2203-x
15. Dobbs-Oates J, Wachter Morris C. The case for interprofessional education in teacher education and beyond. *J Educ Teach*. 2016;42(1):50–65. doi:10.1080/02607476.2015.1131363
16. Strunk J, Dr D, Pavelko S, et al. Interprofessional education for pre-service school-based professionals: faculty and student collaboration. *Teach Learn Commun Sci Disord*. 2019;3:9. doi:10.30707/TLCSD3.1Strunk
17. Ministry of Health and Care Services. *The Coordination Reform — Proper Treatment – At the Right Place and Right Time*. Oslo: The Government; 2009.
18. Whiteley RF, Judy G, Cathy R, Wilda W, Deb C. Effective teaching and learning in interprofessional education in child welfare. *J Educ Train Stud*. 2014;2(4):148–158. doi:10.11114/jets.v2i4.427
19. Almqvist A-L, Lassinantti K. Social work practices for young people with complex needs: an integrative review. *Child Adolesc Soc Work J*. 2018;35(3):207–219. doi:10.1007/s10560-017-0522-4
20. Anaby DR, Campbell WN, Missiuna C, et al. Recommended practices to organize and deliver school-based services for children with disabilities: a scoping review. *Child Care Health Dev*. 2019;45(1):15–27. doi:10.1111/cch.12621
21. Martinussen M, Kaiser S, Adolfsen F, Patras J, Richardsen AM. Reorganisation of healthcare services for children and families: improving collaboration, service quality, and worker well-being. *J Interprof Care*. 2017;31(4):487–496. doi:10.1080/13561820.2017.1316249
22. Almendingen K, Molin M, Šaltytė Benth J. Large-scale blended learning design in an undergraduate interprofessional course in norway: students' perspectives from an exploratory study. *J Res Interprof Pract Educ*. 2021;11(1):1–26. doi:10.22230/jripe.2021v11n1a319
23. Lillejord S, Børte K. *Learning and Teaching with Technology in Higher Education - a Systematic Review*. Oslo: Knowledge Center for Education; 2018.
24. Smith K, Hill J. Defining the nature of blended learning through its depiction in current research. *High Educ Res Dev*. 2019;38(2):383–397. doi:10.1080/07294360.2018.1517732
25. Bryan A, Volchenkova KN. Blended learning: definition, models, implications for higher education. *Bull South Ural State Univ Series*. 2016;8:24–30.
26. Curran VR, Sharpe D, Forristall J, Flynn K. Student satisfaction and perceptions of small group process in case-based interprofessional learning. *Med Teach*. 2008;30(4):431–433. doi:10.1080/01421590802047323
27. Bronstein LR, Abramson JS. Understanding socialization of teachers and social workers: groundwork for collaboration in the schools. *Fam Soc*. 2003;84(3):323–330. doi:10.1606/1044-3894.110
28. Almendingen K, Saltyte-Benth J, Molin M, Almendingen K, Šaltytė BJ, Molin M. 'Large scale blended learning design in an interprofessional undergraduate course in Norway: context description and supervisors' perspective. *MedEdPublish*. 2021;10(162). doi:10.15694/mep.2021.000162.1
29. Foss C, Guldbrandsen LM, Løndal K, Ulleberg I, Ødegaard NB, Øien I Constructing interprofessional education: the case of INTERACT (Interprofessional Interaction with Children and Youth). Its 21 4th conference on interdisciplinary teamwork skills for the 21st century; 2018. Available from: https://www.ntnu.no/videre/konferanse/Its21/abstractbook.pdf.
30. Evans L, Vanden Bosch ML, Harrington S, Schoofs N, Coviak C. Flipping the classroom in health care higher education: a systematic review. *Nurse Educ*. 2019;44(2):74–78. doi:10.1097/NNE.0000000000000554
31. Almendingen K, Molin M, Šaltytė Benth J. Preparedness for interprofessional learning: an exploratory study among health, social care, and teacher education programs. *J Res Interprof Pract Educ*. 2021;11(1):1–11. doi:10.22230/jripe.2021v11n1a309
32. Oslo Metropolitan University (OsloMet). Ethical guidelines for research at Oslo Metropolitan University (OsloMet); 2021. Available from: https://ansatt.oslomet.no/documents/585743/53632647/Ethical+Guidelines+for+Reserach+at+OsloMet/3dccee65-e17e-04f6-34d3-a8e58f280c88. Accessed June 21, 2021.

33. The Norwegian Centre for Research Data; 2021. Available from: http://www.nsd.uib.no/. Accessed February 20, 2021.
34. University of Oslo. Nettskjema; 2020. Available from: https://www.uio.no/english/services/it/adm-services/nettskjema/. Accessed June 21, 2021.
35. Suter E, Arndt J, Arthur N, Parboosingh J, Taylor E, Deutschlander S. Role understanding and effective communication as core competencies for collaborative practice. *J Interprof Care*. 2009;23(1):41–51. doi:10.1080/13561820802338579
36. Ministry of Education and Research. National regulations relating to a common curriculum for health and social care education; 2017. Available from: https://www.regjeringen.no/contentassets/389bf8229a3244f0bc1c7835f842ab60/national-regulations-relating-to-a-common-curriculum-for-health-and-social-care-education.pdf. Accessed September 09, 2019.
37. Interprofessional Education Collaborative. Core competencies for interprofessional collaborative practice: 2016 update; 2016. Available from: https://hsc.unm.edu/ipe/resources/ipec-2016-core-competencies.pdf. Accessed November 17, 2019.
38. Bali S, Liu MC. Students' perceptions toward online learning and face-to-face learning courses. *J Phys Conf Ser*. 2018;1108:012094.
39. Radzimski V, Leung F-S, Sargent P, Prat A. Small-scale learning in a large-scale class: a blended model for team teaching in mathematics. *PRIMUS*. 2021;31(1):1–16. doi:10.1080/10511970.2019.1625472
40. Biggs J, Tang K. *Teaching for Quality Learning at University*. 4th ed. Maidenhead: Oxford University Press; 2011.
41. Langford M, Damşa C. *Online Teaching in the Time of COVID-19: Academic Teachers' Experience in Norway*. Centre for Experiential Legal Learning (CELL), University of Oslo; 2020.
42. Oslo Metropolitian University. The digital university of the future: strategy for digital transformation 2018–2024; 2018. Available from: https://ansatt.oslomet.no/documents/585743/77463421/Strategy+for+digital+transformation.pdf. Accessed November 17, 2019.
43. The Norwegian Agency for Quality Assurance in Education. The students' judgement; 2018. Available from: https://www.nokut.no/en/news/the-students-judgement/. Accessed September 09, 2019.
44. Morton SMB, Bandara DK, Robinson EM, Carr PEA. In the 21st century, what is an acceptable response rate? *Aust N Z J Public Health*. 2012;36(2):106–108. doi:10.1111/j.1753-6405.2012.00854.x
45. Lunde L, Bærheim A, Johannessen A, et al. Evidence of validity for the Norwegian version of the interprofessional collaborative competency attainment survey (ICCAS). *JInterprof Care*. 2020;35:604–611.