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FULL-LENGTH ARTICLES

Lessons Learned From Co-Designing Educational Programs for Student and Practicing Healthcare Professionals in Nursing Homes: A Participatory Qualitative Study

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Our aim was to examine the co-design process of two educational programs based on scientific research, to investigate which factors influenced the co-design processes and which lessons we learned. Participatory qualitative research on multiple cases was conducted with representatives of the university, healthcare education (university of applied science), secondary vocational education and training and nursing home care practice. Data were analyzed using a critical creative hermeneutic analysis. Three themes influenced the co-design processes: (1) facilitation of the processes, (2) team members' attributes and (3) diverse interests and structures. Participants' diversity slowed down and deepened the collaboration. The positive climate and personal attributes enabled the processes. The complexity of the co-design processes, conflicting interests and making use of the full potential of the diversity were challenging aspects. These challenges can be overcome by organizing and facilitating co-design processes skillfully.

Background

The actual use of scientific research results in care practice can make an important contribution to improving the quality of care in nursing homes (NHs) (Curtis et al., 2017; Estabrooks et al., 2009). However, healthcare professionals do not automatically adopt and apply new knowledge (Diehl et al., 2016; Rycroft-Malone et al., 2004; Saunders & Vehviläinen-Julkunen, 2016; Steinskog et al., 2021). The use of scientific knowledge is facilitated when it is created in interaction between healthcare practice and research (Curtis et al., 2017; Rahman et al., 2012). To translate scientific knowledge into care education, involvement of the knowledge users in designing educational materials stimulates a successful uptake (Bowen & Graham, 2013). In the case of NH care, the users of scientific knowledge are nursing and healthcare students and practitioners, and their teachers and educators. A recently published scoping review on the facilitators and barriers to learning among practice-trained students and practicing caregivers in NHs showed that they learn better when their learning needs are incorporated into educational programs, such as needs related to content, form, length, and use of language (Muller-Schoof et al., 2021).

To create user-friendly formats and a support base among future users, and to secure the translation of evidence-based (EB) knowledge into practice and care education in order to improve the quality of care in NHs, close collaboration between these stakeholders and researchers is necessary. This is also known as co-design. Co-design is a participatory research approach

(Bergold & Thomas, 2012). There are many different ways to describe co-design, the key characteristics being new products that are generated collectively with all stakeholders in a relational process, with the purpose of changing the stakeholders' situation for the better (Abma et al., 2019; Bergold & Thomas, 2012; Bratteteig et al., 2012; McIntyre, 2008). We define co-design as a process of collective creativity applied across the entire design process (Bratteteig et al., 2012; Sanders & Stappers, 2008). This implies engaging future users in the design process: exchanging perspectives among stakeholders, giving equal voice to different types of knowledge, sharing power among all participants and mutual learning are all pivotal in co-design (Bratteteig et al., 2012).

To enable student and practicing healthcare professionals in NHs to adopt and apply new knowledge (Manley et al., 2009), we aimed to co-design educational programs in which the results of scientific research were embedded, jointly with professionals representing students, educators, and NH care. We aimed to create educational programs that can be linked both through education to students' internships in the workplace in NHs and to healthcare professionals at their workplace. The users of the educational programs are teachers, trainers, students and healthcare professionals. To date, there is little knowledge about this co-design process (Jull et al., 2017; Rahman et al., 2012). To this end, we conducted two case studies (Crowe et al., 2011; Stake, 1994) co-designing educational programs, to learn about the factors that influenced the co-design processes. Our research question was: "What have been the experienced hindering and enabling factors in the co-design of educational programs based on scientific research findings with researchers, teachers and lecturers from different levels of care education, nurses from NH practice and an educational development expert?" This article will first describe the two cases, including a description of the co-design steps. Based on our participatory qualitative research into the co-design process, we subsequently report on the factors that enabled or hindered this process. Last, we report on the lessons learned. The content of the educational programs that were designed is described elsewhere.

Two cases

As a part of an overarching project, we co-designed two educational programs with multiple stakeholders. The project aimed to contribute to improving the quality of person-centered care for older adults, by enabling students and practicing healthcare professionals in NHs to acquire scientific knowledge and apply it in practice (ZonMw, 2019). The aim of each of the two co-design teams was to design an educational program for NH students and practicing healthcare professionals at three different educational levels (bachelor's and two vocational levels), to stimulate the use of EB instruments in practice for purposes of practice development.

The first case was “The story as a quality instrument,” an instrument for NH quality improvement based on narratives of older adults receiving long-term care (Scheffelaar et al., 2021). This is a systematic procedure for collecting, analyzing, and synthesizing narratives, to learn about older adults’ needs, wishes, and desires, and to improve the quality of NH care.

The second case was based on an evaluation tool for geriatric rehabilitation care (Janssen et al., 2019). This tool offers multidisciplinary NH care teams insight into the quality of their geriatric rehabilitation care and areas for improvement. Use of this tool provides healthcare professionals with instruments to take ownership of the quality improvement cycle.

During the co-design projects (September 2019–December 2020), members of both teams were financially compensated for four hours a week to participate. The researcher/facilitator/co-designer was appointed full-time, based on the research grant. For the co-design process, the participatory co-design cycle described by Bratteteig et al. (2012) was used. Below we describe the co-design teams ([Table 1](#)), the six co-design steps ([Table 2](#)), and the main similarities and differences between the two co-design processes.

Co-design team members

In total 11 members joined the two co-design teams. The PhD researcher was on both teams. The co-design team of Case 1 consisted of five members, the co-design team of Case 2 consisted of six members ([Table 1](#)). Five undergraduate nursing students who tested exercises for team 2 are not considered to be team members, as they joined the team for only 20 out of 68 weeks of the co-design project. Also, they joined after discussions and decision-making about the main points of the educational program had taken place.

Co-design process

The two co-design projects lasted for 16 months (September 2019–December 2020). Project goals were formulated together with representatives of participating care and educational organizations in the overarching project (others than the team members in the co-design projects) before they began. At the start of each co-design project, these goals were shared with all team members. Also, both teams were informed about the EB instruments for which the educational programs were designed. One team included a member who had expertise with the EB instrument (“The story as quality instrument”). This expert instructed the team on how to use the instrument. The other team consulted an expert outside the team for two hours.

Subsequently, the facilitator of the co-design projects (IMS) scheduled monthly face-to-face meetings and created each meeting’s minutes. At the end of each meeting, teams decided jointly on the next steps and tasks. Due to the COVID-19 pandemic, teams changed to online meetings in April 2020. Each online meeting started with a check-in to reconnect and hear how everybody

Table 1. The team members

Team	Person (P)	Profession	Context	Work experience	Experience designing?	Roles
Team case 1	P1	PhD researcher (IMS)	University	30 years	Yes	Coordinator, planner, reporter, co-leader,* expert on VET and bachelor's training, researcher
	P2	Lecturer and PhD researcher	Undergraduate students at university of applied sciences	23 years	Yes	Developed the initial instrument, content expert, co-leader
	P3	Vocational trained nurse	NH psychogeriatric unit	40 years	No	Domain expert
	P4	Teacher	Student healthcare assistants at VET school**	19 years	No	Domain expert
	P5	Lecturer and senior researcher	Undergraduate nurses at university of applied sciences	44 years	Yes	Co-leader, domain expert
Team case 2	P6/ P7***	Vocational trained nurse/nurse	Innovation unit for geriatric rehabilitation care at NH	8 years/10 years	No/yes	Domain expert
	P8	Lecturer-practitioner,**** physiotherapist	Multidisciplinary geriatric rehabilitation innovation center at NH and physiotherapy students at university of applied sciences	37 years	Yes	Domain expert, co-leader
	P9	Lecturer, senior researcher (PhD)	Undergraduate students at university of applied sciences	19 years	Yes	Domain expert, co-leader
	P10	Teacher	Vocationally trained nursing students at VET school	27 years	No	Domain expert
	P11	Educational development expert	University	9 years	Yes	Designer, coordinator, expert in both VET and bachelor's education, co-leader
	P1	PhD researcher (IMS)	University	30 years	Yes	Coordinator, planner, reporter, co-leader, expert in VET and bachelor's training, researcher

* Defined as: "an emergent and dynamic team phenomenon whereby leadership roles and influences are distributed among team members" (D'Innocenzo et al., 2016)

** VET: school for vocational education and training

*** P7 was representative during maternity leave of P6

**** An academically trained health caregiver, working in both education and practice, who is able to care, teach and research (Leigh et al., 2005)

was coping with the situation. For several months (April 2020–September 2020), the co-design process slowed down because of high workload in both care and educational practices owing to the pandemic and the summer break.

During the summer break (July 2020–August 2020), the educational development expert and facilitator worked on a format for both educational programs, based on the needs and restrictions of team members expressed

in prior meetings. Returning from summer vacation, some team members felt pressured to deliver a result due to the deadline committed to the grant provider.

During the remaining meetings (September 2020–November 2020), teams jointly decided about the place of the educational programs within existing curricula, what educational years the programs would best suit, and what educational levels and learning goals should be defined. Next, teams used existing exercises and developed new exercises to meet the learning goals. In one team (Case 2: evaluation and improving interdisciplinary NH care), five undergraduate students tested some exercises and converted offline exercises to online versions. This was helpful, also to keep momentum in the process.

Toward the end of the co-design projects, nurses had a smaller role (more as advisor than as co-designer), as teachers took the lead in developing suitable exercises. One nurse withdrew from the project because of pandemic-related work overload.

The Six Co-Design Steps

[Table 2](#) offers a description of how each step was investigated and applied in Cases 1 and 2, following the six steps of the participatory co-design cycle (Bratteteig et al., 2012).

Methods

Study Design

To gain more insight into which factors influenced the co-design processes, the two cases were investigated in a participatory qualitative descriptive study. Our research question was: “What have been the experienced hindering and enabling factors in the co-design of educational programs based on scientific research findings with researchers, teachers and lecturers from different levels of care education, nurses from NH practice and an educational development expert?”

Data Collection

To identify hindering and enabling factors of co-design processes within the two cases, qualitative data were collected during the entire co-design process. A total of 66 documents were collected, including transcripts of audio recordings of semi-structured interviews with the co-designers at the start, halfway through, and at the end of the co-design period; reports of the monthly meetings; first author’s personal logs; photographs of summaries of discussions; and timetables on a flipchart ([Table 3](#)). With these data, we both monitored and iteratively adjusted the co-design processes and answered the research questions. Also, we set up the interviews longitudinally instead of only retrospectively, as the result of the co-design—namely the final educational programs—could influence the experience of the team members.

Table 2. The six steps of the participatory co-design cycle (Bratteteig, 2012) and our application

Co-design steps	Aim of step	Case 1: <i>The story as quality instrument</i>	Case 2: <i>Evaluating and improving interdisciplinary NH care</i>
Identify opportunities	Explore the problem and setting, understanding practice	In one two-hour session we introduced ourselves, shared ideas, made agreements, divided some tasks and discussed how to proceed.	Idem
Generate knowledge	Mutual exchange of knowledge and creative ideas, learning from experts	An expert (team member) that developed the instrument explained the method in steps to the other team members between September 2019 and January 2020. We met four times, and four team members (except for the expert) interviewed a resident to experience and deeply understand the method. Due to conflicting agendas and the COVID-19 pandemic, the project stalled from January to May. We had five online meetings between May and July, when schools were closed until September for summer break.	An expert (not a team member) explained the tool in one two-hour session. The team proceeded to explore how the scientific knowledge could be transformed into care education and care practice during three physical meetings and through dialogues. Between February and June, five undergraduate students, recruited by the lecturer, joined to test exercises. The students made a quick transition from offline to online. We had four online meetings before summer. Between July and September schools were closed for summer break.
Identify needs and desires	Identify needs & wishes of users in the setting	Needs and wishes came up during the dialogues throughout the whole process. Questions to identify needs during meetings were mainly asked by the facilitator and the lecturers from the university of applied sciences. Desires and needs were also identified by consulting colleagues outside the meetings, especially by the VET teacher. A lecturer wanted to mark every exercise to the phase of the Plan-Do-Check-Act-cycle (PDCA cycle) the exercise contributes to, in order to further align the program with the bachelor's curriculum.	Desired focus groups with students to learn more about their needs were cancelled from March 2020 due to COVID-19. Needs and wishes came up during our dialogues throughout the whole process. Questions were mainly asked by the facilitator, educational development officer and lecturers from the university of applied sciences. Desires and needs were also identified by consulting colleagues outside the meetings, especially by the VET teacher and the VET nurse. Lecturers and teacher wanted to have videos made of three IP cases, to support the IP lessons, as there were few real IP cases available.
Describe the requirements	Inventory conditions and emerging requirements	During our meetings we critically questioned each other about our own area of expertise and concerning the place in the curricula what educational years and educational levels and what learning goals should be defined. Each expert's opinion in their own field was leading in the design.	Idem
Envision	Develop ideas about possible designs	This team made use of the format the educational development expert suggested to the other team to meet the needs and requirements, such as learning goal, duration, educational level, etc., per exercise. One lecturer and the facilitator designed or collected exercises that fit into the format and met the agreed learning goals. The VET teacher was helped by one lecturer with designing exercises for her VET students. The expert critically improved the texts. The nurse advised on the understandability of the texts. A design agency made the layout of the manual.	The educational development expert suggested a format to meet the needs and requirements, such as learning goal, duration, educational level, etc. per exercise. In selecting and developing exercises the two lecturers and the educational development officer took the lead. The facilitator also added exercises. The VET teacher was helped by the educational development officer. The nurse was absent during this stage, due to work overload. A design agency made the layout of the toolbox. A director produced three short videos based on scripts of cases, written by three team members.
Develop, test and evaluate prototype	Concretize ideas through sketching or prototyping for mutual learning	Team members experienced the method partially. Because of COVID-19 they were not able to finalize the whole experience of the method "The Story as a quality instrument". A teacher manual and a student manual for different educational levels were finished. The educational program was tested and evaluated by students, teachers and trainers between January 2021 and December 2021.	Five undergraduate students from university of applied sciences B were involved in our co-design for 20 weeks, starting February 2020, to test several IP exercises. A toolbox with exercises for different groups and different educational levels plus three filmed IP cases were finished. The educational program was tested and evaluated by students, teachers and trainers between January 2021 and December 2021.

VET: school for vocational education and training

Table 3. Summary of collected data

Time period	Data overarching the project	Data case 1: The story as quality instrument	Data case 2: Evaluating and improving interdisciplinary NH care	Aim/focus of data
17 June 2019	Report of first meeting (n=1)			Report agreements and decisions taken about communication and organization
June 2019–Jan 2021	Author's log of the project (n=1)	Author's log of the Story (n=1)	Author's log of Evaluation Tool (n=1)	Monitor co-design process by reflecting on the projects, identifying hindering and facilitating factors
Sept 2019–Dec 2020		Reports of co-design team meetings on the Story, offline (n=4), online (n=12)	Reports of co-design team meetings on Evaluation Tool, offline (n=4), online (n=7)	Monitor co-design process by reporting decisions, discussion points, planned actions
Sept 2019		Transcription of individual starting interviews with team members by phone (n=4)	Transcription of individual starting interviews with team members by phone (n=6)	Inventory project expectations, expected factors of success, expected obstacles, ambitions, personal learning objectives, availability; identify when the cooperation within the development team was successful for the team members.
Sept 2020		Transcription of individual halfway interviews with team members by phone (n=4)	Transcription of individual halfway interviews with team members by phone (n=5)	Monitor cooperation within the development team so far, own role in team, thoughts about the composition of the team, equal contributions, feeling of making a valuable contribution within the team, responsibility for result, availability
Jan 2021		Transcription of individual final interviews with team members by phone (n=4)	Transcription of individual final interviews with team members by phone (n=4)	Inventory looking back at the process, roles, team composition, what helped the co-design, what hindered, thoughts about product, availability, fulfilling expectations and ambitions, personal lessons learned
June 2019–Jan 2021		Photos taken during meetings (n=4)	Photos taken during meetings (n=4)	Picture themes, discussed timelines, brainstorming to support the co-design process

Data analysis

Data were analyzed using a critical creative hermeneutic analysis (CCHA) method. This method, consisting of seven phases ([Table 4](#)), can be characterized as a participative, inclusive and collaborative way of analyzing data with research participants (Boomer & McCormack, 2010; van Lieshout & Cardiff, 2011). The value of this collaborative and creative approach is that multiple insider's perspectives are taken into account and the creative part bypasses potentially limiting cognitive processes, therefore providing a rich analysis.

An example of artwork ([Figure 1](#)) was created in Phase 4 and was contested in Phase 5. Team members saw “love for each other, an enthusiastic start, an unclear goal, chaos, the red line representing a mid-dip, ending with hope.” The creator said she sought to express “redemption and liberation after a difficult middle section, uncertainty, a process not synchronous with VET

Table 4. The seven phases of the CCHA method (van Lieshout & Cardiff, 2011) and our application

Phase	Aim of phase	Approach in this study
Preparation	Increase readability of the data files, IMS made two reconstructions as structured stories and sent these to the team members for a member check.	IMS wrote two narrative reconstructions of the co-design cases by reading all 66 documents twice, highlighting parts that seemed important and/or dealt with the research question. The reconstructions were anonymized. The reconstruction of the Story was sent to the four team members and member-checked by four members. The reconstruction of the Evaluation tool was sent to five members and member-checked by four members. Most had some suggestions or additions. All feedback had been processed by IMS. Six members, a mix from both teams, agreed to participate in the subsequent phases of the CCHA, including IMS.
Familiarization	Read the reconstructions and note what strikes the most.	Participating members received both reconstructions by e-mail, with the request to read them and document their questions, imagery and feelings (also bodily) when reading the texts at home.
Contemplation	Individual warming-up, overthinking: what does this mean to me?	On the two reconstructions we contemplated individually and in silence which factors influenced the co-design process in relation to the research question. Some read through their notes, others reflected on a chair or went for a short walk.
Expression	Express the essence of the reconstructions creatively.	The team members were asked to creatively portray the essence of both reconstructions, in silence. This could be done by means of photos, drawings, painting, sculpture, poetry or another form of creative expression (Figure 1)
Contestation and critique	Others indicate what they see in one's work; next, the creator indicates what was intended to be expressed.	First, the team members were invited to write down what was seen and felt, and what each creative form reminded them of. Next, we contested and critiqued the creative works. Last, we summarized which essential themes of each work had to be included in phase 6. A facilitator (MV) took pictures, kept the time, and wrote down key words from the contestation and critique.
Blending	Take a step back to identify emerging themes	Team members explored in dialogue the coherence between the preliminary themes from the individual contributions, clustering the most apparent themes as well the more hidden ones.
Confirmation	Check whether themes match the original data, by going back to the original texts and searching for raw data that support the thematic framework. Themes can be reformulated, and new themes can be added as needed.	All authors, three of whom did not participate in the co-design or the CCHA, investigated the reconstructions to find confirmation of the preliminary themes and sub-themes that came up in phase 6. Also, all authors investigated the themes even more deeply, clustered more compactly and named the new themes. The three main themes were found. This result was member-checked.

education, sometimes clashes caused by pressure, struggling along the way, including COVID-19 measures and too little representation of VET colleagues.” We then took the subjects of relations, power imbalance, unclear communication of goal, personal traits and needs, and conflicting structures to Phase 6.

Ethics Statement

This study was approved in 2019 by the Ethical Review Board of the Tilburg School of Social and Behavioral Sciences of Tilburg University (registration number EC-2019.69). All co-design team members provided written informed consent.

Results

The two cases revealed diverse hindering and enabling factors of the co-design process, summarized in an overarching theme and three subthemes with influencing factors at the individual, team, and organizational levels ([Table 5](#)). The themes will be further outlined below, indicating predominantly

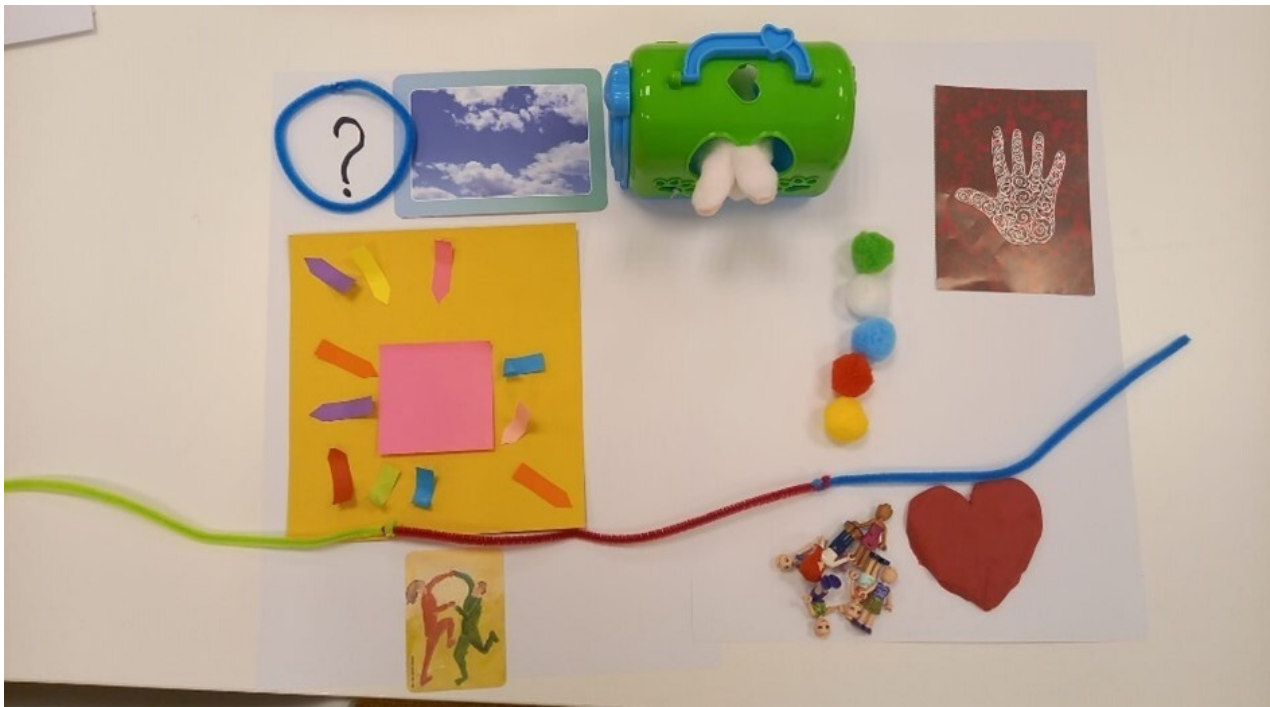


Figure 1. Example of an expression in phase 4 of the CCHA.

Table 5. Influencing factors and challenges of co-design process

Overarching theme	Themes	Influencing factors	Challenge
Diversity	Facilitation of co-design process	<ul style="list-style-type: none"> • Evaluation on process • Leadership • Students' involvement • Role clarity • Content experts • Online meetings 	Reaching shared understanding Dealing with and taking leadership Questioning equal degree of participation
	Team members attributes	<ul style="list-style-type: none"> • Experience • Personal needs and ambitions • Traits/personality • Knowledge 	Meeting needs Dealing with uncertainty Reaching equal power distribution
	Difference interests and structures	<ul style="list-style-type: none"> • Priority of an organization • Individual priority • Interests • Existing organizational and institutional structures • Time • Workload • Consequences of the COVID-19 measures 	Dealing with diverse interests and structures Dealing with consequences of COVID-19 measures

challenges in the co-design process. These challenges will be discussed in the Discussion section. The data of the used transcripts of the interviews are anonymized and referred to as a numbered P (Table 1). Six persons joined the CCHA and it was a mix of both co-design teams and a representation of all professions (P1, P3, P4, P5, P10, and P11).

The teams went through almost all six steps of the participatory co-design cycle in sequential order (Bratteteig et al., 2012). The step “identifying needs” was the only step not taken in chronological order (Table 2). The steps

“identifying opportunities” and “identifying needs” were the most complicated because the domains have various characteristics, goals, and needs. This diversity is reflected in the resulting flexible educational programs, with various attachments and options.

Overall, the co-design process was experienced differently by the team members. These differences were related to their role, personal attributes such as experience and their interest, differences which are reflected in the themes and influencing factors. Most themes have both enabling and hindering factors, except for students’ involvement, which was an enabling factor. The influencing factors were interrelated. All team members were satisfied with the educational programs, as expressed in the final interviews. Five of the six CCHA team members agreed with the results of the analysis. One team member was on maternity leave.

Theme 1: Facilitation of the co-design process

We define facilitation as the enabling of the co-design by people, resources and mechanisms. The facilitator enabled by explaining the concept and goals of co-design, guiding the teams through the six steps of the participatory co-design cycle and planning, coordinating, reporting and stimulating dialogues and shared decision-making. For some, the concept of co-design and goals were clear to start pioneering:

“..to be able to take a pioneering role myself. I liked doing that.”

- Final interview P8, lecturer practitioner.

For others, the concepts of co-design and goal were not understood, which prevented them from identifying needs for their domain and proposing ideas:

“It is not clear what is expected of me.” - Start interview P10, VET teacher [VET: school for vocational education and training].

The recapitulation in the reports after the meetings helped some team members in reaching understanding. However, reaching a shared understanding was a challenge as we did not regularly evaluate the process. Also, the concept of leadership within this co-design project was not clear to all and was understood differently, which was challenging. This obstacle was reflected in the fact that some participants did not actively participate. This led to others taking the initiative, resulting in some contributing more than others, an issue that will be further addressed below. Some team members wanted more central leadership from the facilitator to get more structure and guidance:

“At the beginning I struggled a bit with finding the structure (..) when do we have to deliver something concrete? (...) maybe [you should] steer that process a little more tightly upfront ... for a long time it seemed rather noncommittal.” - Final interview P2, lecturer.

Others enjoyed the leadership:

“What I just really liked is that you [facilitator] let it go.” - Final interview P9, lecturer.

Although the co-design process was not clear to all, the meetings were held in an open, exploratory atmosphere. All team members were invited to share ideas and knowledge, and when every voice was heard, the first outlines for the next step were formulated by team members of the university and university of applied science:

“I think we just really made joint decisions, determined the direction together.” - Final interview P9, lecturer

Participation of all team members all the time was difficult to achieve and therefore a challenge, as teams did not often evaluate the co-design process. Therefore, mutual expectations and unevenness of contributions within the teams were not addressed. For example, it remained unclear for a long time that VET-trained nurses and VET teachers struggled with their role, were not all familiar with the subject of co-design, and/or were inexperienced with designing educational programs. The degree of participation turned out to be a topic that did bother some team members, as it was remarked at the end that some people did more than others:

“The contribution of the VET team members and the others was not evenly distributed.” – CCHA 25 February 2022

“[No experience developing educational programs] ...which makes me think, my contribution is not that much.” -Final interview P3, nurse

The experts of the EB instruments had a facilitating role in transferring their knowledge to the other team members. A difference between the two co-design teams was the presence of the content expert inside and outside the team. Having an expert inside the team was experienced as both limiting and enriching, as it gave more depth to the result:

“I even learned from it. Over the past period I really liked that someone who was already very knowledgeable in this [the instrument] was in the co-design team” - Final interview P5, lecturer

It inspired team members, but the result also stayed close to the original product:

“The side trails could have been explored better.” - CCHA 25 February 2022

In the other team, more freedom was experienced to deviate from the existing product, which is reflected in the result—for instance, the focus of the educational program is interprofessional learning instead of the tool itself.

The theme “facilitation” focused not only on task-related processes but also on relational processes. The relational aspect of co-design was influenced by the shift to online meetings due to the COVID-19 pandemic measures. As a result, the feeling of togetherness grew, as team members took care of each other more explicitly by starting every meeting with a check-in to hear about how everyone was coping with the situation. There were positive group climates, with in-depth understanding of each other’s priorities. On the other hand, it was difficult to stay focused during a two-hour online meeting and to connect and communicate online. The inspirational and relational aspects of face-to-face meetings were missed:

“...actually, in co-design you have to come together. And because of the COVID that has been compromised a bit.” - Final interview P8, lecturer-practitioner

Theme 2: Team members’ attributes

Collaboration between team members with diverse backgrounds, experience and various personal traits were both slowing down and deepening the co-design process. The diversity of team members enabled them to learn from each other’s expertise and perspective. The multiple perspectives enriched the co-designed material:

“..very valuable to have someone from care practice who clearly indicates what works and what doesn’t work in practice.” - Halfway interview P2, lecturer

Different personal traits were influencing the co-design process. All team members were good listeners and joined the dialogues and decision-making. This led to learning and a better understanding of each other’s domains. Dealing with uncertainty, however, sometimes was a challenge for team members. Some team members felt discomfort due to the uncertainty of the co-design process and expressed their personal need for concreteness. When the products emerged and became tangible, they felt more comfortable:

“When things became concrete, it calmed me down”. - Final interview P10, VET teacher

Others were mostly comfortable with the uncertainty of the co-design process, expressed that they enjoyed it, and utilized it by taking the lead or supporting others. The involvement of undergraduate students in one co-design team was inspiring to the team members because of their positive energy and flexible mindset:

“I found it insightful that the students themselves were going to give these exercises to other students. That they see a lot of opportunities to do things digitally, which I thought beforehand yes, maybe you should do this face-to-face. Well, COVID is coming, everything has to be digital, and those students just meet with a mindset of, well, then we will just convert it in such a way that it can also be done digitally. Do not come up with excuses, or it is all difficult, no, they are inventive, look for solutions, I think it’s clever, also that flexible mindset. I found that inspiring.” - Final interview P11, educational development expert

The co-design process enabled team members to work on individual needs and ambitions, expressed at the beginning of the co-design process, such as broadening one’s network, which was inspiring to them, and learning from others and their domains. In this way our co-designing was a reciprocal and motivational process. Some team members expressed that they surprised themselves in exploring new roles and therefore learned about themselves:

“I often feel that others know a lot more than I do. And that I do not really have that much to contribute. That I have quite often. (...) And in this project, I was able to experience very nicely that that is just a wrong assumption.” - Final interview P8, lecturer practitioner

It was a challenge formulating the needs for the different domains because the target groups for whom the educational program was designed differed: both undergraduate nurses and VET trained school-based and work-based healthcare professionals. A full and inflexible curriculum also hindered the formulation of needs for the domains of VET education because they didn’t see any space. See below at theme 3.

In both teams, the academic-trained members were in the majority. This led to an unintended power imbalance due to lack of experience in co-designing educational programs, which hindered some team members. During the halfway interviews most VET team members mentioned that having more VET participants in the team would have helped them serve the multiple VET levels better, enhance their individual voice and thereby achieve a more equal distribution of power:

“It would be nice to be able to spar with someone from my own VET level. Because I notice that these kinds of projects are more widely supported in higher professional education. This is still a bit unknown with us and it is sometimes difficult to find the right people for me to spar with.” – Halfway interview P4, VET teacher

Theme 3: Diverse Interests and Structures

Both personal interests and the interests of team members' organization influenced the co-design process in relation to their workload, by prioritizing the primary jobs over the co-design projects. This conflict of priority was mostly felt by involved teachers and nurses. By contrast, team members from the university prioritized the co-design projects as they had a direct responsibility toward the grant provider:

“..I also think that we are obliged to do so to the grant provider ... if we continue in the coming months, that a suitable product can be delivered.” – Halfway interview P11, educational development expert

Teachers prioritized taking care of students in converting offline education to online education due to COVID-19 pandemic measures. NHs were closed during the lockdown and healthcare staff had to deal with extra workload and extra stress caring for residents and residents' relatives:

“[We] really, really, really had to work really hard [...] really just worked with residents. Did not really have time for other things–” - Halfway interview P6, nurse

Because team members were so absorbed in their primary work, it was difficult to get everyone to join every meeting and contribute to co-design between meetings. The chosen co-design structure of four hours per week for 16 months was therefore inefficient and hindering, as the teams lost momentum in-between. Also, existing and fixed structures limited the co-design process in both teams, including educational structures (e.g., schedules, curricula, vacations, end terms) and NH care structures (e.g., fully planned work schedules), which hindered the flexibility of team members. For example, existing vacation structures of the educational institutions made planning of meetings difficult in some periods and slowed down the process during the summer and Christmas seasons:

“Which I just found very difficult in the summer (...) when the teachers actually have 5 weeks' vacation. That was also the case with the Christmas break. And that that was the main reason. And sometimes I had the idea that it took the speed out of the whole process–” - Final interview P3, nurse

Lack of time and presence due to consequences of COVID-19 pandemic measures were factors hindering inclusion of every voice during the whole process:

“It takes time to discuss the principles of co-design, to get to know each other, how you normally perform, what role could you have here, how are we going to shape that co-design. Which

gives you a bit of a feeling at the end: it was not really a whole co-design, more a co-design of a few people—” - Final interview P5, lecturer

An enabling factor of the co-design process was, however, that our online meetings had more structure and team members saved travel time; therefore, the teams worked more efficiently in the last part of our co-design process:

“The online meetings had the advantage that people are very to the point, with a clear agenda, it is very efficient—” - Final interview P8, lecturer practitioner

It was difficult to embed the new educational programs into existing curricula. VET curricula were especially overcrowded, which is largely determined by national educational institutions:

“I have concerns about the structural introduction into the curricula of applied science education and VET education, and whether teachers will only use a small part of it instead of the entire program, because curricula are jam-packed—” - Halfway interview P2, lecturer

The educational programs were made as flexible as possible in order to meet all needs and desires. In this way, the fixed structures enabled us to design flexibly and creatively. A final consequence of the COVID pandemic measures was that co-designed educational programs could not be tested in multidisciplinary (MD) teams because MD teams did not have consultations together or were not present and worked from home:

“... the instrument [evaluation tool] which we have adapted to long-term care to test it ... we were not allowed to meet at first due to COVID and then, during the holiday period, all those MD consultations changed. Usually very few disciplines were present—” - Halfway interview P6, nurse.

Discussion

We conducted a participatory qualitative study on two cases to explore the experienced enabling and hindering factors of co-designing two educational programs with diverse groups of participants: researchers, educators from different levels of care education, nurses from NH practice and an educational development expert. We found that co-designing with this composition of participants was a complex process that cannot be fully controlled and where diversity played a role. The participating individuals, team processes and interests of team members’ organization influenced the co-design. A positive atmosphere as well as personal qualities such as listening and paying attention to others enabled collaboration and cohesion of the teams. Personal expertise and diversity of perspectives also deepened the collaboration, which is reflected in the results. The varied structures of the organizations, combined with

prioritizing for primary work in busy times, hindered the co-designing. A lack of clarity around the role and lack of regular evaluations were not helpful to the co-designing process either. However, participants had an active role in the critical creative hermeneutic data-analysis so that the results reflect different perspectives. We recommend the use of the participatory co-design for the co-design of educational programs (Bratteteig et al., 2012).

While we experienced challenges during the co-designing processes ([Table 5](#)), dealing with diversity was the overarching obstacle. In line with this result are findings from previous studies that state that collaborating in groups consisting of individuals representing different organizations creates challenges that can be difficult to deal with (Akkerman & Bakker, 2011; Curşeu & Schruijer, 2017; Schruijer, 2021). We might accept that co-design comes with challenges on the one hand. On the other hand, Akkerman & Bakker state that to what extent teams succeed in overcoming challenges by learning across their boundaries will contribute to making use of the entire potential of the diversity of the teams (Akkerman & Bakker, 2011). To that end, we should have evaluated the process more often.

We address the challenges we encountered and discuss how to overcome them: achieving shared understanding, achieving equal power distribution, dealing with co-leadership, deciding about the degree of participation, dealing with uncertainties, dealing with conflicts of priorities, and dealing with the consequences of the measures of COVID-19. To avoid duplications, the challenges “meeting individuals’ needs” and “the consequences of the measures of COVID-19” are woven into the discussion of the other challenges.

First, a shared understanding of common goals turned out to be difficult to achieve at the beginning. A shared understanding is important as it encourages the exchange of relevant information (De Dreu et al., 2008; Hinsz et al., 1997). Scientific literature on cross-sector collaboration reads that “It may be wise by educating participants about the concepts, information, and tools that are key” (Bryson et al., 2006; Keast et al., 2004). This means that all participants need to be informed, be able to form an opinion and be given the power to influence (Bratteteig et al., 2012). Even though the facilitator presented the concept and steps of co-design and project goals of the project to the team members at the beginning, they were not completely understood by everyone. In retrospect, the language and format of the presentation should have been more tailored to the diversity of the team. Lack of regular evaluation of the process caused late discovery. When it was discovered during the half-way interviews, more individual support was offered. We suggest discussing in co-design teams whether and how shared goals are understood. In line with this, Lindblom et al. (2021) describe the need for using varied arrangements that “allowed for several modes of expression and met the needs of different individuals.” To meet the diverse needs and to reach a shared understanding, we suggest customizing communications to the team members, such as an animation or video about co-design or a short, illustrated reader on that topic. Also, more situational individual support could be offered. For instance,

empowering an individual team member by presenting the benefits of the co-design project for team members' own community. We therefore suggest using materials and work methods that encourage everyone to contribute, for instance by clearly explaining abstract concepts through more creative interactive workshops and by providing extra individual support.

We sought to recruit a representative of all stakeholders in the co-design project to achieve functional diversity. We experienced an unintended power distribution due to the team composition, with a minority of VET representatives per team. Scientific co-design literature describes the risk of unequal power distribution and describes diverse ways of reaching equal power distribution: by addressing or intending to address power issues (Bratteteig et al., 2012), continuous use of feedback and limiting researcher domination (Pallesen et al., 2020), reassessing composition of the teams (Lindblom et al., 2021) and amplifying diverse voices (Chauhan et al., 2021). When we discovered the imbalance, we chose to amplify voices. Amplifying voices can be accomplished in different ways, by giving extra attention to the voice of the minority, adding more of the minority members to the teams, or through support from minority colleagues outside the co-design team (Chauhan et al., 2021). We gave extra attention and looked for extra support outside the team as we were financially restricted from inviting extra team members. We suggest that when preparing a co-design project, close attention should be paid to equal distribution of power, not only functionally, but also socially.

The concept and consequences of co-leadership were not clear to all team members, which we did not recognize and address, as a consequence of not evaluating the process regularly. Co-leadership is defined as “an emergent and dynamic team phenomenon whereby leadership roles and influences are distributed among team members” (D’Innocenzo et al., 2016). D’Innocenzo et al. (2016) found a significant positive relationship between co-leadership and team performance. Provan & Kenis (2008) connect co-leadership to participation of all and more centralized leadership to focus on results. Because the participation of all is an important aspect in participatory co-design, we argue that co-leadership is an appropriate choice in co-design projects. It is recommended that the form of leadership be carefully chosen, discussed, and potentially trained in co-design projects since not all people fit the role of co-leader (Hoch & Dulebohn, 2013; Pearce & Manz, 2005). This is an aspect that could be specified in the required profile of all team members and assessed during the preparation of a co-design project.

The degree of participation should be a subject of discussion with the team members to manage expectations. We expected all team members to fully participate during the whole project, but in retrospect this was not necessary, as for instance designing lessons was not everybody's expertise. This finding was also addressed by Bratteteig et al. (2012): “There may be different depths of participation.” We suggest discussing in which steps participation of every team

member is necessary and making effective use of all team members' expertise. We also suggest that future projects allow varying degree of participation and contributions of team members in all steps.

Further, some team members had difficulty dealing with the discomfort of the open-ended process and asked for more guidance. The need for more guidance aligns poorly with co-leadership. Scientific literature describes that the nature of co-design is complex and open-ended (Nachbagauer, 2021; Schruijer, 2021; Snowden & Boone, 2007). Having a conversation about the discomfort, the potential benefits, and envisioning a positive emerging future could have helped team members cope with this uncertainty (Senge, 1999; Senge et al., 2004; Trischler et al., 2018). On one hand, co-design and co-leadership are expected to be reciprocal (Bishop et al., 2000; Hoch & Dulebohn, 2013), but on the other hand, uncertainty is inherent in a co-design project, so some skill in dealing with it is useful. Tolerance for uncertainty could be specified in the required profile of potential team members, and when recruiting people during the preparation of a co-design project, this trait could be assessed. Also, dealing with uncertainty could be addressed during the process, as co-designing is dynamic, and uncertainties may arise along the way.

The consequences of COVID 19's measures led to additional workload in the primary work of participants from care and education, so participants gave less priority to the co-design project. It is known from literature that co-design cases with multiple stakeholders make conflicts of priorities inevitable (Bryson et al., 2006, 2015). Provan & Kenis describe the tension between "participation of all" and "focus on the result" as one of the inherent tensions that exist in multi-stakeholder collaboration (Provan & Kenis, 2008). In our collaboration, "participation of all" was overtaken by "focus on the results" in the end, as results were needed to proceed with the project according to some team members. In our teams, these conflicts should have been explicitly negotiable to come to a collaborative approach. Having a skilled facilitator and regularly taking time to evaluate conflicting interests are suggested.

Lessons Learned

Based on these insights and the influencing factors from the results, we arrive at the following lessons learned ([Figure 2](#)). We learned not only from challenges but also from the enabling factors. First, after identifying common ground and a shared problem to work on during the preparation of a co-design project, we suggest organizers find a skilled facilitator. Our experience indicated this role was complex, as the facilitator deals with all addressed challenges and must stimulate the team members to use the potential of their diversity. The organizers should also think about required profiles of the team members, as we learned that the individual qualities were both enabling and impeding factors. We learned it enables the process to compose a team that is functionally diverse, with participants who hold listening skills, experience, the ability to deal with uncertainty and co-leadership. We learned that it is useful to acknowledge potential power imbalances in advance. Foreseen power imbalances can be overcome by amplifying voices; for instance, by adding an

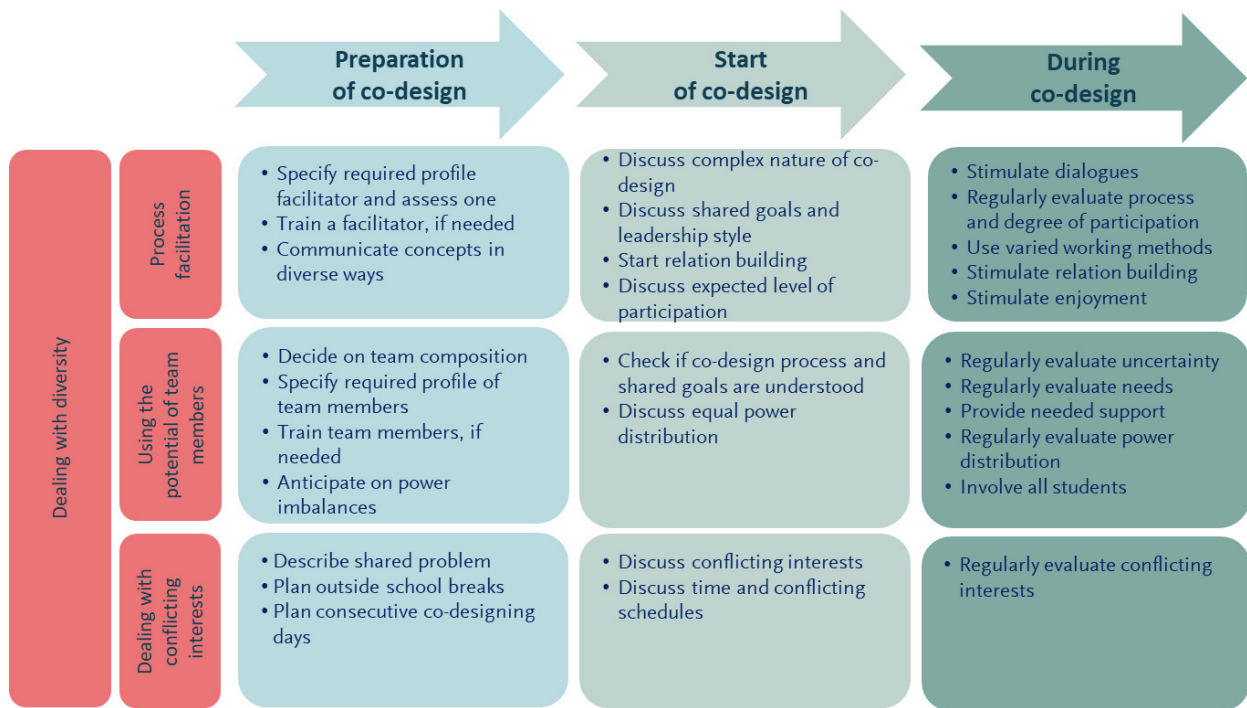


Figure 2. Lessons learned for co-designing evidence-based, educational programs for student and practicing health professionals in NHs

extra colleague, offering a training, or finding other ways to empower participants. We recommend checking the appropriateness of communication used to explain the shared goals and discuss ways of co-designing, and to avoid using abstract language or vague concepts. Plan the co-designing process in the quieter months of the educational system, preferably outside school breaks and exam periods. Also, plan consecutive co-designing days or workshops rather than scattering the hours over a 16-month period. Planning a fixed time in the month for workshops can be helpful as schedules are loaded.

At the start of the co-designing process, we discovered that it is important to address the complexity and uncertainties of a co-design project. We neglected to discuss this subject, which might have prevented some team members from feeling comfortable. Further, we suggest checking if and how explanations about co-designing, shared goals, and co-leadership are understood to avoid explaining things too abstractly or unclearly. If necessary, offer support or extra information in a way that is understood by all team members. For instance, develop a workshop about co-designing with interactive exercises with an expert, or make an animation about co-leadership followed by a discussion or dialogue. An enabling factor was building a positive climate which helped team members feel safe contributing to the team. We recommend giving this factor attention. Finally, we suggest taking time to discuss conflicting agendas and interests from the start and address the expected or necessary levels of participation. We found out that not everybody needed to participate in the whole process. Talking about the process makes it clear to everyone.

The main lesson we learned during our process was that evaluation of the process is important to identify and handle the challenges mentioned above early on. In our process, we neglected evaluation for a long time because we

were focused on the result. Therefore, we suggest putting the subject on the agenda as a regular item and addressing frictions as they arise, e.g., on equality, clarity, emotions, priorities, conflicting interests. The use of dialogues rather than discussions enabled us to explore the diverse potential of our teams. It was a shared effort to stimulate every voice being heard. We thus recommend using dialogues to explore instead of discussions. Further, we could have offered a greater variety of working methods to meet the differences between team members. We suggest choosing working methods that are concrete, diverse, and that invite team members to participate, preferably offline, to promote relationship-building and creativity. Involving undergraduate students motivated and contributed to deepening the result. We recommend also involving VET students in future projects, as they should have been included as well. Although we focused more on the challenges than on the enablers, on a personal level we had good relations, so we suggest stimulating relations during the process. We learned that relation building was easier offline than online. Finally, we enjoyed working together, which allowed us to enjoy the process.

Strengths and Limitations

To the best of our knowledge, this was the first study to document the influencing factors of the co-design process with diverse groups of stakeholders from NH practice, education, and research with the aim of translating scientific findings into education. The co-design consisted of two diverse teams that developed good relationships and put great effort into dialogues to understand each other's situations. Team members also actively participated in analyzing the data, ensuring that the different perspectives are present in the results. Some limitations have to be taken into account. Due to the COVID-19 pandemic measures, we switched to online communication after six months. We know from recent research that online meetings reduce creativity (Brucks & Levav, 2022), so online meetings will have affected our creativity too. We likewise missed informal communication, experienced fewer relationship-building opportunities, and could not visit each other's workplace. It is difficult to predict in what way the results would have been different with co-designing totally offline. Further, although only six out of ten team members joined the CCHA, it was a good representation of the two teams and all the domains. In line with this, although the researcher had a major role in researching, facilitating, and co-designing, team members participated both in co-design by co-leadership and in the data analysis through the CCHA. Also, the co-authors critically contested the final CCHA step, which reduced the dominance of the researcher. We did not include students as a user group in our co-designing teams from the beginning—this wasn't possible as it was not known from the start in what year the education would be suitable. Later in the process, the plan to hold focus groups with students was called off due to the pandemic. Although undergraduate students were involved in one of the teams, we recommend involving students of all educational levels in future co-designing projects as early as possible. Even though we conducted the investigation in the Netherlands, we consider the Dutch contexts comparable

with international contexts in the Western world. Minor deviations with foreign situations may exist (for instance the vacation periods of educational institutions), but we expect such deviations to have a minor impact on the results. Finally, this research is limited to the NH context. We suggest conducting research in other contexts such as care for community-dwelling older adults, care for people living with an intellectual disability, and youth care/healthcare.

Conclusions

The influencing factors of co-designing educational programs, together with representatives of the university, care education, and care practice, to translate scientific knowledge into the practice of care for older adults were analyzed participatively. The positive climate and personal attributes enabled the process. The complexity of the co-design process, conflicting interests and making use of the full potential of the diversity were challenging aspects. These challenges can be overcome by skillfully organizing and facilitating co-design processes. We suggest further research to explore how the potential of these diverse teams can be optimized and to explore how this co-design configuration can be useful in contexts other than NHs.

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Conflicts of Interest

No conflicts of interest have been declared.

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