

Co-Care

2022

# Learning Framework



Co-Care

Co-created ICT solutions for Alzheimer's Informal Caregiving



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## Executive Summary

This document describes the learning framework for the training course with its objectives, competencies, outcomes, and teaching methodologies detailed, as well as the toolkit for caregivers of persons with Alzheimer's/dementia with its aims, scope, and its creation process.

The learning framework of the training course is based on the results obtained in previous work where technological solutions have been identified for caregivers of people with Alzheimer's/dementia considering the needs they cover and those that do not, and whether they have been designed in a participatory manner or not. The main objectives of the course are in line with the original project idea that it is necessary to encourage that the specific technological solutions/products for caregivers of people with Alzheimer's/dementia are exclusively aimed at covering needs, and unmet needs, as well as that they are made from start to finish with the people who will eventually use them. As one of the objectives of the course marks, specific skills are needed to be able to propose, design, develop and evaluate interventions to solve a real need. For this reason, there are hard and soft skills. At the end of the course students are expected to know and know how to make a good identification of the needs of the person to whom the intervention to be carried out is addressed in a user-centred manner and able to plan and implement a process for designing, developing, testing, and evaluating a technological intervention through co-creation. The syllabus design of the training course is based on the PBL principles.

The toolkit frameworks it is also based on the results obtained in previous work. The main aim is to improve the autonomy and quality of life of caregivers of people with Alzheimer's by using the e-health toolkit designed from their view to cover their needs. Content provided will cover the needs caregivers of people with Alzheimer's/dementia as helping them cover those need can improve their autonomy and quality of life. The creation of the toolkit, as it could not be otherwise will follow the principles of co-creation.

## 1.- Introduction / About this document

The second objective of the Co-Care project is to develop practical guidance on how to implement design-enabled co-production for ICT designers & providers, users, and ICT, health, and social care students. Following this aim, a learning framework has been developed with an innovative and multidisciplinary approach to teaching and learning and with the aim to stimulate entrepreneurship and entrepreneurial skills of higher education teaching staff and company staff meanwhile facilitating the exchange, flow, and co-creation of knowledge.

One of the starting points of this framework is that interactions between HEIs, enterprises and final users is always compulsory to create an enriching flow and exchange of knowledge. In addition, the work done in WP1 and its results (see here: <https://co-care.eu/en/reports>) have been the basis for the creation of the objectives and contents of both the training course and the toolkit.

This document is structured as follows:

- **Chapter 2. Training Course:** include the objectives, competencies, learning outcomes and teaching methodologies of the training course are presented and explained.
- **Chapter 3. Toolkit for caregivers of persons with Alzheimer's/dementia:** include the aims, scope, and its creation process.

## 2.- Training Course

The learning framework of the training course is based on the results obtained in previous work ([https://co-care.eu/files/ckeditor/CoCarestateofplayreport\\_2.pdf](https://co-care.eu/files/ckeditor/CoCarestateofplayreport_2.pdf)) where technological solutions have been identified for caregivers of people with Alzheimer's/dementia considering the needs they cover and those that do not, and whether they have been designed in a participatory manner or not. With this, here are presented the objectives, competencies, learning outcomes and teaching methodologies that will be used.

### 2.1.- Aims

The main objectives of the course are in line with the original project idea that it is necessary to encourage specific technological solutions/products for caregivers of people with Alzheimer's/dementia to be exclusively aimed at covering needs, and unmet needs, as well as be made from start to finish with the people who will eventually use them. Following this idea, the objectives of the course are:

- To provide the knowledge and skills necessary to be able to propose, design, develop and evaluate interventions to solve a real need.
- To make sure that the intervention is co-created with all the relevant actors involved in a multidisciplinary and evidence-based way.

### 2.2.- Skills

As one of the objectives of the course marks, specific skills are needed to be able to propose, design, develop and evaluate interventions to solve a real need. For this reason, we will need to work, learn, and assess the following skills:

- Co-creation skills: the ability to create a space which final users input in a technology prototype play a central role from beginning to end. The preparation to a let final users to submit ideas, designs and/or content.

- User-centred approach skills: traits and practices that help to identify and address final needs to create a positive experience. Rely heavily on problem-solving and communication.
- Digital skills: involve the ability to learn and operate various technology (hardware and software).
- Prototyping skills: the ability to create mock-ups for the validation of technological proposals.
- Management skills: qualities that help to govern both tasks and people. A good manager is organized, empathetic and communicates clearly to support a team or project.
- Effective communication skills: the abilities used when giving and receiving different kinds of information. Some examples include communicating ideas, feelings or what is happening around. Communication skills involve listening, speaking, observing and empathizing. Having strong communication skills is important in every industry at every career level.
- Interpersonal skills: traits that one relies on when interacting and communicating with others. They cover a variety of scenarios where cooperation is essential. Developing interpersonal skills is important to work efficiently with others, solve problems and lead projects or teams.
- Problem-solving skills: qualities that help to determine the source of a problem and quickly find an effective solution. Solving problems might require certain industry or job-specific technical skills.
- Time management: the ability to complete tasks and projects before deadlines while also maintaining work-life balance. Staying organized can help you allocate your workday to specific tasks by importance. Deeply understanding your individual, team and company goals can provide a starting point when deciding how to manage your time.
- Teamwork Skills: the qualities and abilities that allow to work well with others during conversations, projects, meetings, or other collaborations.

- Creative thinking skills: techniques used to look at the issue from different and creative angles, using the right tools to assess it and develop a plan. It might be a new approach to a problem, a resolution to a conflict between a team, or a new result from a data set.
- Critical thinking: the ability to analyse information objectively and make a reasoned judgment. It involves the evaluation of sources, such as data, facts, observable phenomena, and research findings.

### 2.3.- Learning Outcomes

The following learning outcomes are expected when the objectives of the course are pursued, and the skills needed to achieve this are worked on with students:

- The student knows how to correctly identify the needs of the person to whom the intervention to be carried out is addressed in a user-centred manner (Skills: User-centred approach, effective communication, interpersonal, critical thinking).
- The student plans and implements a process for designing, developing, testing, and evaluating a technological intervention through co-creation. (Skills: co-creation, user-centred approach, digital, prototyping, management, effective communication, interpersonal, problem-solving, time management, teamwork, creative thinking, critical thinking).

### 2.4.- Learning Methodologies

Our ability to understand and solve problems is very much linked to our knowledge. The increasing complexity of problems requires cross-disciplinary and contextual knowledge and a higher diversity of skills. In turn, this must lead to multi-dimensional solutions rather than one single-truth answer. Introducing and integrating knowledge and skills from different disciplines and contexts is, however, a challenging task and requires innovative approaches to educational design.

Educational transformation is an ongoing activity in all disciplines addressing future needs. Most of the educational institutions in Europe are in an ongoing process of transformation from the traditional paradigm, which is discipline-oriented, lecture-centred, and based on basic and applied technical knowledge; to a new paradigm, which is interdisciplinary, contextualised, student-centred, and based on a complex understanding of knowledge. A common approach used by institutions is the implementation of problem oriented and project-based curricula. This is because the shift from teaching to learning is considered the most important innovative aspect of this educational concept, and consequently, the task of the teacher is altered from transferring knowledge into facilitating the learning process of the students (Kolmos, 2006).

In terms of theory, the understanding of problem-based learning (PBL) takes its point of departure in the constructivist sociocultural approach of understanding learning and education (Kolmos and de Graaff, 2007). Many different variations of PBL practice may be identified, ranging from large-scale implementation of PBL at a departmental or institutional level, to small-scale implementation in a single course. In general, de Graaff and Kolmos (de Graaff and Kolmos 2003, Kolmos and de Graaff 2007) summarise the main learning principles in three approaches which we will use in the training course: cognitive learning, contents approach and social approach:

1. The **cognitive learning approach** means that learning is organised around problems and will be carried out in projects. It is a central principle for the development of motivation. A problem provides the starting point for the learning process, places learning in a context, and bases learning on the learner's experience. The fact that learning is also project-based means that students must work with a unique task involving complex and situated problem analyses and problem-solving strategies.
2. The **contents approach** especially concerns interdisciplinary learning, which not only stresses but also spans traditional subject-related boundaries and methods. It is exemplary practice in the sense that the learning outcome provides a good example of the overall objectives. Furthermore, it supports the relation between theory and practice by demonstrating the fact that the learning process involves an analytical approach using theory in the analysis of problems and problem-solving methods.

3. The **social approach** is team-based learning. The team learning aspect shows the learning process as a social act in which learning takes place through dialogue and communication. Furthermore, the students are not only learning from each other, but they also learn to share knowledge and organise the process of collaborative learning. The social approach also covers the concept of participant-directed learning, which indicates a collective ownership of the learning process and, especially, the identification of the problem.

PBL has become increasingly accepted as a useful concept in education. It can be employed as a contextualised approach to integrate knowledge across disciplines and develop diverse skills among students by bridging university and society. The advantages of problem-based learning are especially identified as the articulated outcome of health and engineering education which aims to provide students with the expected professional competencies (de Graaff and Kolmos 2003).

This theoretical background paves the way for the employment of PBL as an innovative strategy for educational design. For this reason, we use PBL as a pedagogic method to deliver cross-discipline knowledge and help engineering and health and social care students to gain the skills needed for sustainable development.

The syllabus design of the training course is based on the PBL principles. Students develop diverse process competencies in addition to technical knowledge and skills through the learning processes, as illustrated in Table 1.

**Table 1. Knowledge and competencies achieved through PBL approach.**

PBL principles	Knowledge and competencies gained
Cognitive learning	Problem-solving Project management Contextual analysis
Contents	Subject knowledge Technical skills Cross-disciplinary knowledge Knowledge management
Collaborative learning	Collaboration Communication (oral and written) Project management and planning

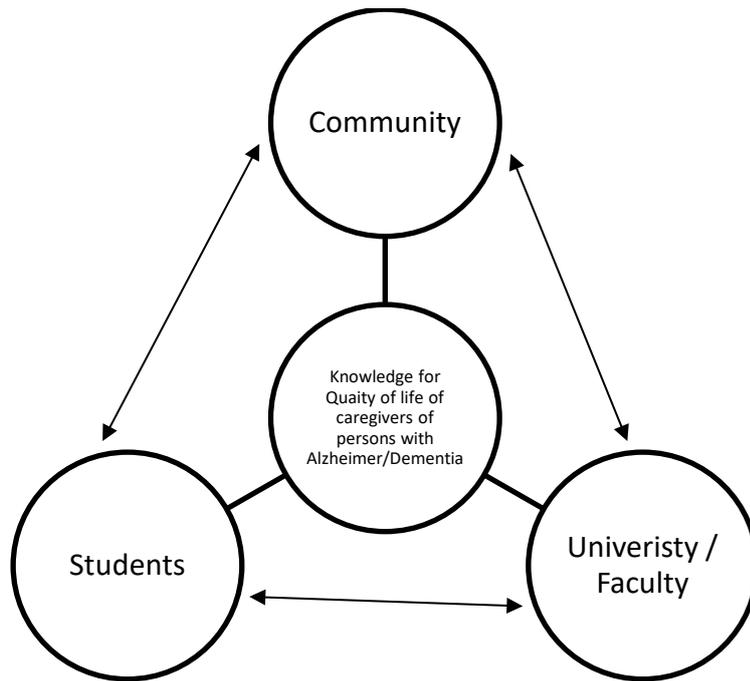
These skills form part of the learning goals as set up by the study board. Inherently, to pass implicates that the student has acquired these skills at an adequate level.

In our specific case the minimum size of the group should be 4 people (at least two in the field of technology and two in the field of health/social care) with less is impossible to implement it since it requires knowledge of different disciplines within the two major health and technology blocks. The real-life problem, in this case, will necessarily be linked to the needs of caregivers of people with Alzheimer's/dementia and their quality of life.

This approach enables students to solve complex and situated problems. In other words, PBL adds interplay, mix and diversity to the core skills and thus creates the basis for a more integrated approach.

The problem-based approach provides opportunities for an increased outreach of education, i.e., learning to the benefit of communities, university faculty, and students. Figure 1 illustrates the fact that at the centre of a need or a problem is knowledge about either, but that to be able to gain that knowledge, you need to collaborate with a mix of partners. These partners - be the businesses, university lecturers, final users, civil servants, or politicians – can, in turn, provide you with knowledge and learning opportunities that you would have difficulties in accessing without defining an integrated problem to address. As a conclusion, this innovative approach can help learners gain inter-disciplinary knowledge and develop diverse skills needed in order to tackle challenges.

**Figure 1. Exchange of knowledge as a learning strategy**



### 3.- Toolkit for persons with Alzheimer's / dementia

The toolkit it is not a learning space in its essence, but as specified in the project it must have a framework for action. It is based on the results obtained in previous work where technological solutions have been identified for caregivers of people with Alzheimer's/dementia considering the needs they cover and those that do not, and whether they have been designed in a participatory manner or not. With this, here are presented the objectives, competencies, learning outcomes and teaching methodologies that will be used.

#### 3.1.- Aims

**Main Aim:** To improve the autonomy and quality of life of caregivers of people with Alzheimer's by using the e-health toolkit designed from their view and to cover their needs.

**Specific aims:**

- To give family caregivers tools to choose ICT-based solutions to facilitate their daily work/life as caregivers
- To develop and improve their skills to better use ICT-based solutions in terms of navigation but also critical thinking and contrasting use and benefits of tools.
- To be able to connect with peers in the same situation to share and exchange impressions regarding solutions but also their role as family caregivers
- To give them ICT-based tools to facilitate their daily work/life, improving their skills and to connect with peers to help them maintain wellbeing.

#### 3.2.- Scope

Theoretically and generally content provided will cover the needs caregivers of people with Alzheimer's/dementia as helping them cover those need can improve their autonomy

and quality of life. The scope, then, will be allied with the findings from previous work<sup>1</sup> where main needs for caregivers of people with Alzheimer's/dementia are the following:

1. Caregiving tasks
  - a. Physical/nursing Care: To support the caregivers and health professionals that direct nonpharmacological therapies in patients with early and moderate Alzheimer diseases. To provide caregivers access to exercises for patients, medication, care and cures, pain management and symptoms.
  - b. Household work: Support with shopping and on all aspects of meal making, particularly forms of shopping they are used to (online or accessed via car/transport).
  - c. Supervision/support: to enhance the care recipients' independence and to avoid carers getting exhausted.
  - d. Coordination: helping to organise a diary, plan to get to appointments, or support someone to complete an activity such as making a cup of tea.
  - e. Help received from others: Receiving support when dealing with the difficulties of caregiving.
2. Relationship with formal service providers: To improve information exchange between healthcare professionals and patients with dementia and their family caregivers to maintain autonomy and continuity in their lives. Counselling multidisciplinary healthcare and communication between equals, avoiding the feeling of loneliness.
3. Housing: Have the house infrastructure ready when, for example, risk situations such as having a person with Alzheimer's leave home alone can occur.
4. Juggling responsibilities: Having to combine different roles as a worker, parent and caregiver among other.
5. Financial Costs: To plan and dimension resources, services, supports, solutions and treatments.

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<sup>1</sup> Based on Queluz et al. 2020

## 6. Personal Health

- a. Physical health: To improve caregivers' physical health care as it has a negative impact on the quality of life and well-being of individuals.
- b. Emotional health: The need of improving psychological symptomatology among dementia caregivers through executive control improvement once caregivers appear to reduce learning, memory, attention, and problem solving. The need of a psychological support for carers (e.g., negative emotions, burden, self-efficacy) through professional facilitated peer support. The need of psychological support for caregivers to fight depression, anxiety, sleep loss, role conflict with work and other interests and losses in the relationship.

## 7. Relationships

- a. With the care recipient: The need for the caregiver to put themselves in the patients' position and improve their relationship. To improve the quality of life, wellbeing and medication adherence and enable them to live well in the community for as long as possible.
- b. With family: The need to improve role and relationship changes to balance caregiving responsibilities.

## 8. Planning

- a. Crises planning: To know in which phases of illness crises are most typical, what are their characteristics, and strategies to be able to manage them.
- b. Future planning: The need for alternative methods to conventional ones of delivering support since caregivers often have constraints of time, distance, etc.
- c. Information about dementia and dementia care: The need for organized information about dementia and dementia care presented in an interactive and easily accessible way. The paper identified the need for family caregivers to acquire skills and strategies to effectively manage dementia symptoms. The paper identified the need of an online resource for dementia caregivers that

generates tailored support recommendations. To improve caregiver competence, e.g., being able to handle caregiving problems.

- d. Information about professional support and formal services: The need of a close, easy, fast and accessible health professional contact without leaving the house. To provide easy access to communicate with health care professionals. Information about support services and local resources.
- e. Information about legal regulation in caring.

### 3.3.- Creation process

The creation of the toolkit, as it could not be otherwise, will follow the principles of co-creation. Co-creation is an active, creative and social process, based on collaboration between producers and users, which is initiated by the company to generate value for customers. It is used in the framework of participatory design which intends to design attempting to actively involve all stakeholders in the design process to help ensure the result meets their needs and is usable. Research suggests that designers create more innovative concepts and ideas when working within a co-design environment with others than they do when creating ideas on their own (Mitchell et al. 2015; Trishcler et al. 2018).

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