This document represents the Didactic Concept of the STUDICODE online dementia course (Intellectual Output „Didactic Concept").

This document is also available on the project website under the section „results" (https://www.studicode.med.tum.de/en/results).

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Didactic Concept

Executive summary

The main goal of the STUDICODE project is to advance the digital readiness of academic educators. An improvement of digital teaching competence is achieved by jointly planning and designing an online dementia course for medical students (learning by doing). The process of course development was supported by a series of Educators' Labs (Learning-Teaching-Training Activities). During these training sessions, experts from the field of didactics and e-learning have provided their support and shared lessons learned from similar projects.

This Didactic Concept addresses lecturers from the psychiatric field with an interest in setting up their own online course. The STUDICODE course and its didactic concept are intended to act as a model to guide and inspire lecturers from all parts of Europe. Particularly, this didactic concept may be a helpful resource for transnational groups of medical educators who are interested in jointly developing an online course.

The Didactic Concept represents the guideline for the educational approach of the STUDICODE online dementia course. The Didactic Concept outlines the course's tools and summarises tips and tricks that the project consortium learned through developing the course. To make this document easy to use in practice, its structure follows four steps that have been proven to be effective in the STUDICODE project.

The Didactic Concept may be useful for educators from the medical field, Deans of Study as well as medical teachers at secondary schools and medical universities. By sharing the steps in developing the STUDICODE didactic concept and lessons learned, the consortium aims at supporting medical educators across Europe to update their didactic toolboxes, develop new courses together across institutions and inspire them to make use of modern approaches for advancing medical education.

Chapters

Step 1 – Review framework conditions

At the beginning of developing an online course by a transnational group of educators, the STUDICODE group has found it to be vital to discuss and create a shared realistic vision of the course. Therefore, a starting point for the course design can be a review and discussion on the framework conditions at their institutions. Such an assessment has been the baseline for the STUDICODE Didactic Concept.

In the STUDICODE project, the framework conditions were assessed along the following checklists:

Checklist for regulatory framework conditions
- ➢ Are there any internal regulations regarding the accreditation of online courses?
- ➢ Is the course linked to other activities in the study programme (e.g. complementing existing lectures)?
- ➢ Are there any internal regulations regarding the duration of the course?
- ➢ Are there already online courses available for students? If yes, which multimedia formats do these course use and how do students like these formats?
- ➢ Is an assessment of the students' learning progress mandatory?
- ➢ Is an evaluation of the course mandatory?

Checklist for technical framework conditions
- ➢ Which Learning Management System (LMS) is used at the site (e.g. Moodle)
- ➢ Is technical support for the LMS provided by the respective institution?
- ➢ Is equipment available for recording videos?
- ➢ Does the institution provide software for editing videos?
- ➢ Are tools available for creating animated videos?
- ➢ How skilled are the educators in using these tools?

This assessment was vital in order to schedule time and plan staff for developing the course. Afterwards, the STUDICODE group reviewed the goals of the dementia course and discussed how these goals can be realised within the framework conditions.

Key goals of the dementia course are to:

- impart what all medical and allied professions should know about dementia
- provide a person-centred perspective on dementia
- complement, but not replace, existing curricula in medical education at the partner sites
- highlight the multiple approaches that can be taken to maintain or improve the quality of life of people living with dementia and their family carers
- enable students to apply an interprofessional, mindful and coordinated model of dementia care as part of their future work
- create a core part of the course to be shared by all partners plus complementary country-specific parts according to national or local requirements

The current curricula for medical and allied professions (e.g. social workers, nurses, speech therapists and psychologists) are highly specialised and do not foresee any interprofessional trainings. The target group of the course is defined by students in their second or third semester who are enrolled in a socio-medical programme at universities or medical schools at the secondary and third sector. Thus, the course aims at equipping students from different fields with a mutual understanding of person-centred dementia care. However, the course is not replacing any existing courses but rather complementing them as it provides a perspective on dementia which is novel in South-eastern Europe. The course thus creates a better understanding of quality of life of persons

with dementia and their family carers. The course was designed in a joint effort from educators at four partner sites (DE, SK, SI, RO) in order to exchange teaching experiences, lessons-learned from previous courses and learn new e-teaching techniques in a collaborative manner. In order to fit this jointly developed course to the specific needs and requirements at the partner sites (e.g. for including topics of national relevance such as national dementia strategies), the course's structure allowed local adaptions of the content.

Given the framework conditions and the definition of the course's goals, the STUDICODE group agreed on the following principles for the course design:

Principles of course design

- The total duration shall be about 90 minutes (excluding time needed for games)
- Incorporate multiple media including infographics, interviews, animated videos, small games and quizzes to make learning engaging and interactive
- Videos and interviews not longer than three minutes each
- Short and concise texts, preferably bullet-point style
- Language style not too technical
- Colours to be used with caution as they can distract from the message
- Provide a knowledge check and a certificate of successful completion which demonstrates the interest in dementia and effort taken and may benefit the students' record
- Provide a downloadable summary of current literature

The total duration of 90 minutes was agreed upon due to regulations at the partner sites. Including different types of media was recommended by e-learning experts at the first Learning-Teaching-Training session (summary available here: https://www.studicode.med.tum.de/en/educators-lab-1-third-meeting-interactive-media-formats) in order to keep students motivated. More information on the different types of media are available in the STUDICODE "Production Manual" here https://studicode.med.tum.de/en/results). In this regard, the length of videos shall be kept short with a preferable duration of less than three minutes for each video. Texts should be kept short and straight to the point in a bullet-point style to keep information structured. The language should be engaging and not too technical. This is achieved by directly addressing students in the text – e.g.: "Do you wish to know more about the financial impact of dementia?". Regarding the design of illustrations, colours should be kept in the same colour palette in order to draw attention to the most important points.
In the STUDICODE course, the colours are taken from this palette:

With highlights from this palette:

The knowledge check on the one hand acts as a tool for students to assess their learning progress. The certificate of participation is a tool for motivating students to complete the course.

→ **Reviewing and agreeing on the framework conditions is important for successfully setting up a didactic concept. It is important that all educators share a joint understanding of the course's goals and purpose.**

Step 2 – Define chapters, assign topics and determine learning objectives for each chapter

In a joint discussion round, the educators in the STUDICODE project discussed and sorted dementia-related topics into chapters. The number of chapters should be limited to make it easy for students to navigate the course. Therefore, the STUDICODE course features seven chapters excluding a "welcome" part, the knowledge check and the course evaluation. Given the overall course duration of 90 minutes, each chapter was planned to have a duration between 5 – 10 minutes.

Then, each chapter was assigned learning objectives. On the one hand, this became important for the educators to keep the chapters focused during the content creation phase. On the other hand, the chapters and structured learning objectives are valuable for the students.

Afterwards, the STUDICODE group assigned media formats to all chapters. More information on the selection and variety of media formats can be found in the output "production manual".

The chapters, media formats, duration and learning objectives (LO) of the STUDICODE online dementia course are as follows:

0. Welcome (5 minutes)

The welcome part explains the goals of the course, how it fits into their study programme and provides information on how to study with the course in regards to the different media formats. Moreover, this part aims at motivating students to complete all chapters.

Content	Media
Welcome to participants	Text LO: this course will complement the lecture
Instructions on using the course	Text LO: the different media formats are easy to use
Benefits from the course	Text LO: completing the course will be beneficial for my future practice

1. Societal impact of dementia (5 minutes)

This section is intended to give a "macro perspective" on dementia that is not present in medical lectures at the STUDICODE partner sites.

Content	Media
Reminder: Dementia not a disease	Animated illustrations LO: dementia is not a uniform health condition, diagnosis and management are very diverse
Rising numbers of people with dementia in Europe, with prediction	Infographic LO: it is very likely that you encounter people with dementia whatever your field of specialisation will be

Content	Media
Dementia as an important cause of mortality	Infographic LO: dementia is a serious health problem with an impact on life comparable to myocardial infarction or lung cancer
Cost of dementia	Drag-and-drop game LO: dementia is a growing problem for society at large
Stigma	Illustration LO: understand why dementia is associated with shame and avoidance

2. Impact of dementia (10 minutes)

This section presents the "micro perspective" of dementia. Unlike existing medical lectures, it is not about the symptoms (i.e. the characteristics by which the doctor or neuropsychologist recognises them), but about the impact of the brain disease on the life of the person and those close to them. Medical lectures and textbooks do not usually feature this aspect either. The same applies to the quality of life and the burden on those providing informal care.

Content	Media
Dementia affects the entire person, dementia is not a problem of one individual only	Interview/ Video LO: dementia cannot be managed by medical treatment alone
Factors affecting quality of life	Illustration IO: much can be done to improve quality of life of persons with dementia
Factors affecting carer burden	Illustration LO: carer burden is not solely determined by symptoms

3. Causes of dementia (10 minutes)

This chapter is not intended to repeat what is usually presented extensively in medical lectures on dementia. Instead, the basic features that can be easily remembered are to be explained. For example, that dementia develops under certain conditions. The presentation of the stages of dementia (asymptomatic, prodromal, dementia) is important with regard to understanding modern biomarker diagnostics and future forms of therapy. Comorbidities are of secondary importance for the psychiatrist or neurologist because they are not usually asked about them. This is more a matter for the general practitioner - but it is important because it holds the key to risk reduction. Regardless of the profession that a student may take on, the topics presented in this chapter need to be known by all medical professions.

Content	Media
Principles of dementia causation	Illustration LO: structure of the many causes of dementia
Localisation	Illustration LO: diseases affect specific parts of the brain, which is important for the problems they causes, but also for detecting and distinguishing them
Spectrum of symptoms	Quiz / game / virtual flashcards LO: dementia is not only memory impairment, the clinical appearance of dementia is not uniform
Pathology precedes symptoms	Illustration LO: we only see the tip of the iceberg; when it comes to risk reduction we need to start early
Comorbidities	Infographic LO: treatment of comorbidities is currently the king's way to risk reduction

4. Diagnosis (10 minutes)

In a medical lecture, tests and interviews are discussed, as well as laboratory findings and imaging procedures, how accurate they are etc. Therefore, this chapter shows students what they are actually doing when they diagnose someone and how they are interfering with their lives (students never think about this because it's so great to make accurate diagnoses). The benefit of early diagnosis for the person and their family is highlighted because one of the main reasons for delayed diagnosis is the reluctance of doctors. When early diagnosis is mentioned, it is often from the perspective of the neuropsychologist who detects something abnormal with sensitive tests. Here, the chapter shows how the onset of dementia manifests itself in everyday life.

Content	Media
Diagnosis as a life-changing event	Game LO: the diagnosis changes the present and future of an individual and their family; it profoundly changes the way of life, shifts roles, annihilates hopes and alters the timeline
Importance of early and correct diagnosis; diagnosis can be a relief	Text LO: diagnosis has important positive aspects because it makes individuals able to act and get support
Differences between ageing and dementia	Game LO: distinguish the two you don't need to know many details but simple criteria

Content	Media
Signs of incipient dementia in daily life	Illustration LO: you just need to open your eyes and ears)
Diagnosis of dementia	Scenario game LO: steps to diagnose dementia

5. Communication (10 minutes)

A separate chapter on communication is unusual in courses about dementia and represents a particularly novel aspect in dementia education in South-eastern Europe. The chapter is not only about the medical informative dialog, but about the role of communication for people with dementia in general. How can it provide support, orientation, closeness and safety in life and what happens when communication goes wrong? In this chapter, communication is framed as an art, not as a technical act.

Content	Media
Impairment of communication in dementia	Text LO: not only verbal communication / linguistic ability, but also understanding of gestures, body movements, facial expressions; understanding signs and symbols
Social and psychological role of communication	Illustration LO: communication is an essential part of social support - this may be particularly important in the digital era
General communication rules	Bullet points LO: observing simple rules makes life easier for people with dementia and those who meet them
Disclosure of diagnosis	Scenario game LO: disclosure is not only an act of providing factual information but a psychological manoeuver

6. Treatment (10 minutes)

In medical lectures and textbooks, drugs and their effects are usually presented and non-pharmacological interventions are usually presented as a secondary tool. To close this gap in the education of students, one main point of this chapter is that for optimal treatment of a person with dementia, several health care professions must work together.

Content	Media
Key components of treatment	Animated illustration LO: a rule of thumb - medication alone does not do the trick

Content	Media
Contribution of non-pharmacological interventions	Illustration LO: there are many opportunities to help - pick the ones that are most appropriate to the person's needs, abilities and resources
Importance of collaboration	Game LO: working together makes the management easier, more effective, and more rewarding
Risk reduction	Illustration and animated video LO: treating comorbidities and changing the lifestyle are approaches that everyone can follow

7. Services and facilities (10 minutes)

This chapter presents another aspect about dementia care that is not present in medical lectures at the partner sites: The support structures available in the home, the community and in instructions are described and how they contribute to quality of life of persons with dementia is presented.

Content	Media
Major types of services along the course of dementia	Illustration LO: services are most useful at particular stages of dementia
Short profiles of services	Text and game LO: what to expect, how to decide in the progression of dementia

8. Knowledge check and certificate (10 minutes)

The knowledge check contains two multiple-choice questions from the topic of each chapter (four answer options, one correct).

9. Course evaluation (5 minutes)

At the end of the course, students are asked to evaluate the course. This online questionnaire inquires about the overall quality of the course, the student's impression of single chapters, the added value to existing lectures, and recommendations of improvements.

→ **Sorting topics into chapters and establish learning objectives for each chapter is valuable for efficiently elaborating the course content and ensuring a sound didactic approach across all chapters.**

Step 3 – Add didactic components to structure chapters

In order to provide orientation in each chapter, all chapters of the STUDICODE course include two additional sections.

The first section is located at the beginning of each chapter. This section outlines what students are expected to know before starting with the chapter. This ensures that students do not get overwhelmed by too much new information and avoid frustration. These sections can be visually identified through special formatting such as:

You already know that...

...dementia is usually due to diseases which damage widespread regions of the brain or areas of key strategic importance. The former include neurodegenerations as well as metabolic, endocrine and infectious disorders. The latter comprise cerebrovascular diseases and head trauma (see chart below).

The second section is located at the end of each chapter. This section summarises what students should take from the respective chapter. It includes the most important information in a bullet style text. This ensures that students stay organised throughout the course. These sections can be visually identified through special formatting such as:

Key points

- The many causes of dementia show a clear clustering
- Diseases affect specific parts of the brain which is important for the problems they cause – but also for detecting and distinguishing them
- Pathology proceeds symptoms and therefore, we only see the tip of the iceberg – when it comes to risk reduction we need to start early
- For risk reduction, treat medical risk factors and recommend a healthy lifestyle

Moreover, the STUDICODE course implements a consistent set of characters that appear throughout all course chapters. These four characters consist of Toni who has dementia, his wife and informal carer Marija, Marija's friend Ana – who also has dementia, as well as Toni's doctor Mrs Lucy. These characters accompany the students through the course and act as a tool to motivate students to go through all course chapters.
The characters are introduced at the start of the course and may look like this:

Hello, I am Ana. I have received the diagnosis of dementia a few days ago. It was a shock. All my plans and hopes are suddenly gone. I am so afraid of the future.

Good day, my name is Toni Kovać. It was at work that I first noticed something is wrong with me. The doctor has suggested that things might get worse. However, I will fight it as long as I can.

Hi, I am Marija, Toni's wife. I came with him when the doctor disclosed the diagnosis. My husband's problems are changing his life as well as mine.

Hi, I am Doctor Lucy. Thank you for supporting me in the office for a few days. I trust you will manage the cases that come in. However, if you run into difficulty I will always be there to help you out.

→ Adding didactic components to allow students to easily navigate the course is important.

Step 4 – Select incentives for course completion

In order to motivate students to go through all chapters and keep them interested in the course, two incentives for course completion were selected. The first incentive is that students can test their knowledge at the end of the course through a quiz. This can help students to check their learning progress. The second incentive is a downloadable certificate of participation. This will be issued to students who complete the quiz successfully. The certificate documents their engagement in the course, testifies their competence in dementia care and may be beneficial for their CV.

→ **Incentives for students need to be chosen to ensure a high course completion rate.**

Lessons learned from creating the STUDICODE Didactic Concept

The STUDICODE consortium has gained valuable insights into modern e-learning didactics through implementing the project. The most important "lessons learned" are outlined below. These tips may be inspiring for other projects or groups of medical educators who are planning to setup a sound didactic concept for an online course in the medical field.

➢ Reviewing and agreeing on the framework conditions is important for successfully setting up a didactic concept. It is important that all educators share a joint understanding of the course's goals and purpose.

➢ Sorting topics into chapters and establish learning objectives for each chapter is valuable for efficiently elaborating the course content and ensuring a sound didactic approach across all chapters.

➢ Adding didactic components to allow students to easily navigate the course is important.

➢ Incentives for students need to be chosen to ensure a high course completion rate.

➢ Less is more. However, educators are reluctant to narrow down information and develop compact and concise texts for students. Editorial meetings with the group of educators may be helpful for discussion how to narrow down certain topics.

➢ Acknowledge the didactic advantages of new media formats such as scenarios and games. Educators with little experience in creating scenarios and games may have difficulties in developing these media formats because the knowledge is not provided as a continuous text. Allowing enough time for educators to familiarise themselves with the advantages of new media formats is important.

➢ Avoiding patchwork: The teaching experience and didactic habits are very different and it is difficult to bring them together. All course contributors need to commit to creating course materials with similar writing styles and adhering to a certain colour palette. A uniform design is vital for the final course to have a coherent look and allows students to easily move from chapter to chapter.

➢ Create new illustrations, videos and game that actually illustrate the message that an accompanying paragraph tries to get across. Material from the internet -even if it is available in the public domain- may not underline the concrete message of a chapter. Taking resources from the internet without consent of the author must be avoided at all costs. Using resources from the public domain to create new materials that support the chapter's message is key. In order to allow others to use the STUDICODE materials for their educational activities, all STUDICODE course materials are available under the Creative Commons licence BY-SA (share alike) 4.0 International (https://creativecommons.org/licenses/by-sa/4.0/).