

›Take Care‹

Serious Game in Nursing Education for Europe

Learning Concept and Guidebook for Teachers



Co-funded by the
Erasmus+ Programme
of the European Union



In international cooperation between:



**FACHHOCHSCHULE
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Austrian Network for Higher Education



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**LITHUANIAN UNIVERSITY
OF HEALTH SCIENCES**



The learning game >Take Care< was developed in 2016-2019 as part of a project network funded by the Federal Ministry of Education and Research (BMBF) and the European Social Fund (ESF). The project "Game Based Learning in Nursing - Playful Learning in Authentic, Digital Nursing Simulations" (GaBaLEARN) was worked on by the collaborative partners University of Osnabrück, Philosophical-Theological University of Applied Sciences Vallendar, Münster University of Applied Sciences and Ingenious Knowledge GmbH. The Erasmus+ project "Take Care International" (TCI) has taken up this preliminary work and iteratively developed the learning game >Take Care< within the framework of the initiative KA202 - Strategic Partnerships for vocational education and training and tested it in an international context, taking into account national and European interests, by the collaborative partners University of Osnabrück (UOS, collaborative management), Ingenious Knowledge GmbH, Tartu Tervishoiu Korgkool, University of Applied Sciences Wiener Neustadt GMBH and Lietuvos Sveikatos Mokslu Universitetas.

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The material presented here is a working version, which is presented as an interim result from the ERASMUS + project "Take Care International" (status: 12.2020). The sub-result "Guidebook for Teachers" (IO 3) has already been translated into the national languages of the project partners and is thus currently available in German, English, Estonian and Lithuanian.

Imprint

Publisher:
University of Osnabrück
Department of Nursing Science
Barbarastr. 22c
49069 Osnabrück

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January 2021

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1. Introduction

Dear teachers in nursing,

with this learning concept we would like to give a classification of the digital learning game ›Take Care‹. The aim is to enable you to integrate ›Take Care‹ into specific curricular and methodological contexts of nursing education. Moreover, we aim to introduce the idea of the game, the game characters and possible game progressions. Serious games are becoming increasingly important in vocational education and training. So far, only few reliable findings are available on the effects, impacts and side effects of this type of teaching and learning – this also applies to the area of vocational nursing education. The serious game ›Take Care‹ was developed, tested and iteratively enhanced over a period of three years (2016-2019). The project was funded by the Federal Ministry of Education and Research (german: “Bundesministerium für Bildung und Forschung – BMBF”) and the European Social Fund (german: Europäischen Sozialfonds - ESF) as part of the project “Game Based Learning in Nursing - Playful learning in authentic, digital care simulations” (german: “Game Based Learning in Nursing - Spielerisch Lernen in authentischen, digitalen Pflegesimulationen” GaBaLEARN). Take Care International (TCI), funded by ERASMUS + (funding period 2019-2021), follows on from previous work. The focus is on the further development and translation of ›Take Care‹ for the european context, as well as the provision of the learning concept and the guidebook for teachers for the international area. In the GabaLEARN project ›Take Care‹ was developed in several steps and used in various training courses in vocational schools for nursing education. Additionally, it was systematically evaluated on a national level with regard to usability, fun and learning outcomes.

›Take Care‹ aims to support and train selected competences relevant to nursing, especially in connection with aspects of interaction, casework and decision-making in nursing. This addresses preferably reflection-oriented aspects of nursing. The practice of nursing relevant handling or of specific nursing techniques (e.g. positioning, mobilization, measuring vital signs, prophylaxis, patient observation, wound care, administration of injections etc.) is explicitly not this learning game’s subject. To train these more technical aspects of nursing practice, digital support systems are being tested increasingly and provided elsewhere.

From a didactic point of view, it is recommended to systematically combine the serious game ›Take Care‹ with place-based classroom phases of nursing education, i.e. to link digitally gained experience with school-supported reflection (blended learning). For didactically reflected use, we recommend that teachers in nursing continue to work intensively with this learning concept. This is not primarily in order to share the reasons and assessments presented here without further ado, but rather in order to take up a specific impulse to examine the possibilities and limitations of digitally supported learning games in nursing education and to reflect on the significance of these offerings for own teaching activities. We would be pleased if you would deal with ›Take Care‹ in this sense, try it out in your teaching settings and share your experiences with us.

We are looking forward to your feedback, which you can enter directly via the serious game in the Appstore! If you would like to have more information about Take Care International, we invite you to contact us: [Take Care International – using a serious game in international nursing education \(eduproject.eu\)](https://www.eduproject.eu)

2. ›Take Care‹: Game Idea

The serious game ›Take Care‹ aims to use digital case simulations to provide playful learning in the field of vocational nursing training, while at the same time realistically depicting the professional reality of inpatient long-term care using complex, authentic scenarios. ‘Serious games’ generally refers to entertaining and interactive (digitally supported) educational offerings (Ganguin 2016). The offer goes beyond pure gaming fun and also serves to convey and acquire “serious” topics, content and skills, for example in connection with socio-political or health-related problems (Fromme, Biermann & Unger 2010). Through playful elements (such as immersion, interactivity, storytelling), the human urge for discovery should be stimulated and used for sustainable learning processes (Unger, Goossens & Becker 2015).

Through ›Take Care‹, learners in the nursing sector are given the opportunity to virtually test their role as professional caregivers in inpatient long-term care and to move interactively through care scenarios. They encounter complex problems relevant to nursing care, which they can deal with in different ways within the framework of simulated but realistic nursing situations, taking into account the situational conditions. In this virtual environment, learners can relieve the burden of everyday nursing challenges, i.e. they can experience, interpret and test themselves without fearing consequences for real nursing recipients or the trainees themselves. This game idea was prepared using the example of long-term nursing care, specifically by simulating a living area in a nursing home. The learners are confronted with different challenges of nursing care work during the nursing process and, alone or in a team, look after four residents suffering from dementia in a shift system over seven days of play. In the course of the game, *ten specific main topics are addressed in the context of nursing care for people with dementia*, which can also be assigned to different learning fields within the framework of nursing care training (Figure 1, p. 7). The focus is on aspects of communication with people suffering from dementia, their relatives and with colleagues in the team. This is to be shaped in the course of the game by means of various dialogue options between the game characters.

The specific game idea can be outlined as follows: The player takes on the role of a professional caregiver via an avatar (see chapter 4.2), who can move freely in a virtual living area for people suffering from dementia. During the course of the game, the game character is confronted with care-relevant tasks and is asked to use appropriate methods of action, interaction and communication in order to make decisions appropriate to the situation.











	Main Topic „<i>Biography work with people suffering from dementia</i>“
	The learners are given the opportunity to get to know the resident's experiences, to practice biographical interventions, and to take the results into account in their nursing activities.
	Main Topic „<i>Housing and housing forms for people with dementia</i>“
	The learners are given the opportunity to deal with the challenges and special features of housing and housing forms for people with dementia.
	Main Topic „<i>Clinical picture dementia</i>“
	Students can learn about the different forms of dementia and specific symptoms. They will have the opportunity to practice dealing with people with dementia and to get into situations characterized by typical behavior. The examination's focus is on communicating successfully.
	Main Topic „<i>Validation</i>“
	This topic includes getting to know and applying the concept of Validation in challenging situations with people suffering from dementia as well as the development of interventions within Validation.
	Main Topic „<i>Cooperation with relatives</i>“
	The learners can improve the professional approach to and involvement of the resident's relatives. There are opportunities to develop strategies for dealing with relatives and their needs.
	Main Topic „<i>Healthy diet for people with dementia</i>“
	This topic refers to getting to know and practicing the handling of special features with regard to the diet of people with dementia and accompanying diseases, using the example of diabetes mellitus. There is the possibility to perceive and assess the health status of the residents and to practice interventions in case of "refusal to eat".
	Main Topic „<i>Nursing care planning/ nursing process</i>“
	The serious game offers the possibility to gain an insight into the creation of nursing care planning (SiS; german: strukturierte Informationssammlung: structured collection of information) during the nursing process.
	Main Topic „<i>Dealing with pain in nursing homes</i>“
	The students learn special features in dealing with pain in patients with dementia, assessment instruments and their application as well as medical and non-medical options of intervention.
	Main Topic „<i>Technical assistance systems for nursing care</i>“
	The learners discuss the reasons and advantages of using technical assistance systems using the example of tracking devices for people with dementia and reflect on the dangers and ethical aspects. They will learn about the MEESTAR model in order to reflect ethically on socio-technical arrangements in care.
	Main Topic „<i>Legal aspects concerning the use of technology in nursing care</i>“
	A thematic examination of the legal framework regarding technical assistance systems' application on the example of using tracking devices is introduced.

Figure 1: Main Topics in the serious game ›Take Care‹

For this purpose, the game character can contact residents, relatives or colleagues at freely chosen times, visit common rooms and work spaces or use assistance from a library. Four residents with different biographies live in the virtual living area, presenting the player with a wide range of nursing challenges. Each virtual resident has his or her own characteristics and individual needs, which must be taken into account when making nursing decisions. When working on problems relevant to nursing care, the learners can rely on the help of experienced (virtual) colleagues within the framework of the serious game and thus master the challenges of nursing care work in an interdisciplinary team. In addition, the learners are asked to include (e.g. biographical) background knowledge and experiences of the (virtual) persons in need of care as well as the perspectives of (virtual) relatives and of course the state of the art (provided by virtual libraries) in the nursing decision making process. In these contexts, the learners experience (playfully) that complex problems in nursing care are rarely clearly and unambiguously defined, but are often characterized by complexity, multi-perspectivity and ambiguity. Specifically, in the course of the game, the players meet different game characters – residents, relatives and caregivers – with the aim of getting to know their characters and biographies and taking this into account in their nursing care work. The content and dialogues of the game are based on the current state of nursing science research, which has been compiled in relation to the main strands of the learning game via international literature research.

3. Didactic Rationale

›*Take Care*‹ was developed considering aspects of nursing science, nursing didactics and media pedagogy in order to design the game concept as well as the contents in line with the knowledge in nursing education and care practice. Within the framework of the TCI project, the serious game was evaluated and adapted by the partner countries involved in the project, Estonia, Lithuania and Austria, with a view to the respective national conditions and requirements of nursing education. In the following chapter, the serious game ›*Take Care*‹ is first classified in terms of media didactics, followed by a brief outline of the reasons for case work in nursing. Then the understanding of competence on which the serious game ›*Take Care*‹ is based on will be explained, which will finally be transferred into a heuristic for the game conception.

3.1 Media Didactical Requirements

Learning, knowledge acquisition and competence acquisition are hardly possible without media. We learn with and about media such as texts and books. Knowledge about cultures is acquired through media. The term “mediatization” (german: “Mediatisierung”) (Krotz 2007) illustrates how much our whole life is interwoven by media in leisure or work context. The process of digitalization simplifies transfer, storage, comparison, networked accessibility and use of all forms of information and data. In everyday life, digital media are primarily used for entertainment and communication, but are also increasingly accessed for acquiring and transferring knowledge. The various forms of analogue media (language, text, image, moving image, sound etc.) are becoming available and linkable on a single level through digitization. Multimedia, linking, networking are becoming a matter of course with the growing media convergence; and this is increasingly expected by (young) users. Since media development is strongly driven by people’s entertainment and communication interests, the gamification of learning offers and educational opportunities is also being discussed. What effects the processes mentioned have on media didactics – i.e. all forms of intentional and functional connection between learning and media – is currently still the subject of controversial discussion (Kerres 2018, Herzig 2014). But digitalization of learning and also gamification of serious subject areas are considered modern and promote (at least temporarily) learning motivation; there is obviously no getting around them for future education. Central findings of media didactics can be focused as follows for the context of *>Take Care<*:

- Media (including digital media) are to be differentiated according to their function in teaching-learning processes and are thus closely related to didactic concepts and decisions.
- Media never transport the intended contents in a quasi-neutral way, but are an independent factor in the pedagogical process that needs to be reflected upon.
- The potentials and effects of (digital) media in teaching-learning processes depend on the experiences people make with media use in their daily mediatized life.
- Digital media still have (at least at present) a motivating new effect for many learners. This is especially true for offers that integrate video and game elements.

- Networking, availability and multimedia with appropriate linking offer new learning and educational opportunities that have so far only been implemented to a limited extent.
- A medial offer alone, as longstanding experiments with e-learning have shown, does not generate knowledge and certainly not competence. A connection with personal interaction processes (blended learning) and active processing and handling possibilities is indispensable, but in any case, conducive to learning.

The potential of digital media has been used sparsely so far in nursing education (Peters et al. 2018, Darmann-Finck 2014, Kamin 2013, Kamin et al. 2013). Media competence and an open and interested attitude towards digital media are very heterogeneous among teachers in nursing education, while at the same time there is a desire for innovative media-supported concepts. The lack of high-quality and evidence-based information offerings is deplored, as is the lack of complex, media-based and case-/problem-oriented teaching and learning situations (Schniering, Baumeister & Bade 2014).

In these contexts, currently, a discourse is developing on suitable criteria for evaluating digital applications in health and nursing care (Kleditzsch 2019, APS e.V. 2018, Albrecht 2016), from which – for the time being – a first heuristic for evaluating digital media in nursing education can be derived.

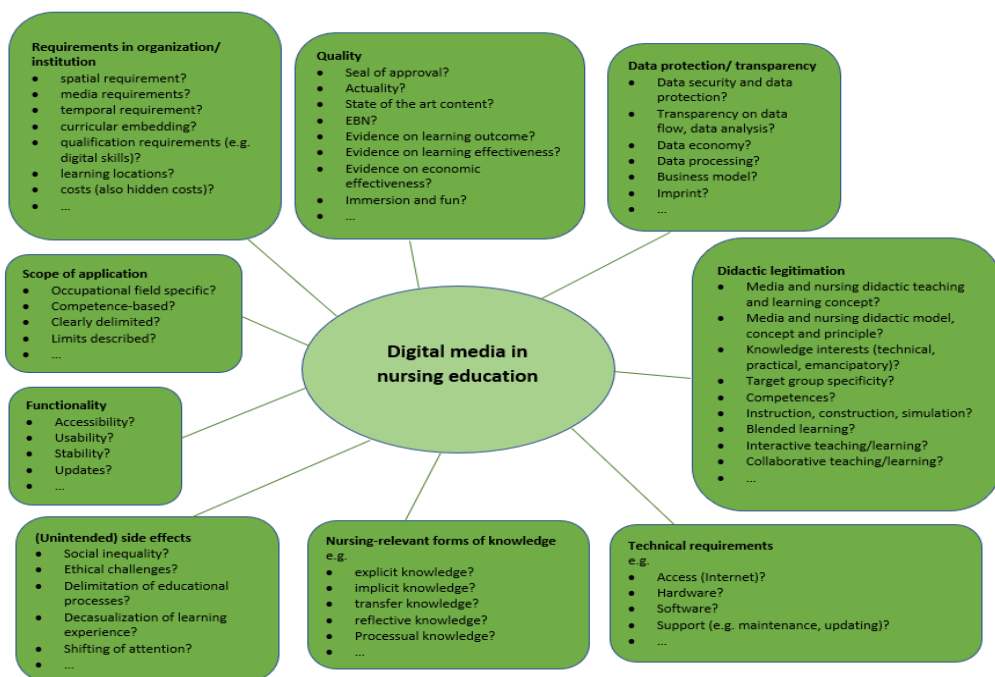


Figure 2: Categories to reflect on the use of digital media in nursing education.

Despite its classification as a “serious game”, ›Take Care‹ has so far only been able to meet the usual expectations of a serious game to a limited extent. Due to the didactic preliminary considerations and the conceptual decision to realize the essential learning content as authentic case simulations primarily oriented on dialogues, the immersion and flow feeling of

a player can only be achieved to a limited extent. But unlike in a case study or video simulation, the learner himself/herself becomes active. He/she has to make decisions in the game and deals with the consequences without the consequences being real as in a practical training. The game motivates to try out and act. At the same time, it is possible to follow the progress of the game and is therefore available for reflection between the students and/or the teachers. The possibility to play the game even outside of class, the player's networking ability and a variety of possibilities to connect the game with other digital media actions offers the opportunity to break new ground in learning with ›Take Care‹.

3.2 Case Work in Nursing

Professional caregivers' work is constitutively characterized by the fact that it is performed on and together with people. For successful and ethically legitimate nursing care, caregivers must establish a relationship with the care recipients and with other relevant parties in the care arrangement (e.g. with relatives and with colleagues in interprofessional nursing teams) in order to renegotiate goals, design, course and further development of nursing care service again and again according to the specific situation (Böhle et al. 2015). Oevermann (1996) links personal services' professional action to the involved actors' ability to do justice to a "*double rationale of action*" (German: "doppelte Handlungslogik"): personal services must therefore be designed as systematic action that is justified (1) in terms of scientific research and (2) by the recipient of help's specific individual preferences and goals. Accordingly, professional action in personal services is measured by the ability of professional actors to convey generally applicable rules and standards based on scientific knowledge in a practical manner with particularities of the individual case, i.e. a recipient of help's individual situation and to justify judgments and decisions on this basis. With regard to professional care, this means that, in addition to distancing cognitive-rational justifications, complex sensory perceptions – physically and bodily – (e.g. smells, sounds, but also moods and atmospheres in a care situation) must also be included in professional decision-making (Hülsken-Giesler 2016a, Böhnke, 2016). In nursing education, one task is to systematically initiate corresponding competences of reflection and interpretation in the sense of clinical judgement (Dütthorn & Busch 2016) through practical training in the (nursing) educational process (Hülsken-Giesler 2016b). This initiation can be supported by "case work".

A “case” is understood to be a situation “containing learning” if it offers cause for reflection or incentives to deal with it in learning processes (Dütthorn & Busch 2016). In this context, clinical judgement also includes competent handling of uncertainty in complex care situations and an awareness of the different actors’ situational perspectives in specific nursing care situations (Dütthorn & Busch 2016). In the serious game ›*Take Care*‹, the characters represent authentic characters with their own stories and preferences. The special feature of digital casework offers the possibility that players only get to know the characters better as the game progresses. Consequently, learners can test their “double rationale of action” based on their structured knowledge of standards and their understanding of individual cases in the course of the game.

3.3 Understanding of Competence from a Didactical Perspective in Nursing

In order to transfer the basic approach of a “double rationale of action” for the justification of personalized care services and corresponding approaches of care-specific case work into a digital learning game, a profession-specific competence concept is required. This concept should map the professional requirement profile in a differentiated manner and allows the definition of specific competence objectives (Dütthorn 2014). In order to develop the learning game ›*Take Care*‹, preliminary work in the field of nursing science and nursing didactics (Hülksen-Giesler et al. 2016, Remmers 2011, Weidner 2011, Darmann-Finck 2009, 2010b) was subjected. This initiated intensive didactic reflection and revision. Finally, a competence model was developed which allows well-founded teaching and learning processes within the framework of digitally supported learning games.

There is currently no unified understanding in vocational education and training of what competences are, nor of how they can be operationalized, measured or divided into dimensions. However, in the in German-speaking area, competences are often described as complex and heterogeneous coping strategies that can be driven by an individual person’s motivation, knowledge, skills and reflection and enable successful action in unresolved and possibly unfamiliar (vocational) situations (Jung 2010). This understanding is the fundament of the competence model for ›*Take Care*‹ and based on a dispositional understanding of competence. According to this, competence is a prerequisite in a person, which becomes apparent through performance, i.e. observable behavior, and can also be described in care contexts through concepts such as “abilities”, “skills”, “capabilities”, “knowledge” etc. Accordingly, competences are constructs that “combine various subject-bound resources for action and combine them to form a comprehensive subjective capacity for action.” („verschiedene subjektgebundene Handlungsressourcen zusammenfassen und miteinander zu einem umfassenden subjektiven Handlungsvermögen verbinden.“) (Roaster 2016, p 200).

Competences serve to master (professional) tasks of action, but they are not limited to problem solving, but rather represent a kind of metacognition from which autonomous and self-determined life results (Brater 2016).

Against this background, the serious game ›Take Care‹'s competence model includes *competences of dealing with structured knowledge of standards*, *competences of hermeneutic understanding of individual cases* and *competences of formation on critical judgement* (Darmann-Finck 2010a, Weidner 2011). The competence dimension of structured knowledge of standards aims at enabling learners in nursing to develop and acquire scientifically based nursing expertise and to know the respective applicable reference (Darmann-Finck 2010b, Weidner 2011). Competencies of this kind are considered a prerequisite for safe and correct implementation of nursing interventions and techniques in the field of action. They allow to assess professional situations in a rule-oriented manner on the basis of the available structured knowledge of standards and to apply appropriate rules of action.

Competence to receive scientific knowledge in order to develop rules of action in nursing practice.

Example from the serious game ›Take Care‹:

The player collects knowledge about biography work and validation during the course of the game (e.g. through dialogues or via the bookshelf in the duty room). In dialogue with the virtual colleagues, the player learns further rules of action for this concept's implementation.

The competence of dealing with structured knowledge of standards is to be linked to the recipients of help's individual needs, wishes, values, goals, resources and problems within the framework of professional nursing care (Hülksen-Giesler 2016a and b, Raven 2016, Weidner 2011). Competences of hermeneutical understanding of individual cases are therefore given a significant meaning in the serious game ›Take Care‹. It emphasizes aspects of working on interactions and building relations while working with the recipients and their social environment that are relevant to nursing care. Those aspects are to be prepared systematically and didactically in educational processes of nursing care (Düttorn 2014, Weidner 2011). Understanding of hermeneutic cases requires the ability to open up cases multi-perspectival, i.e. the multitude of case interpretations and possible problem solutions. Often these interpretations depend on the perspective of persons involved (e.g. affected persons, relatives, caregivers, doctors, management etc.). In this context, competent nursing care means to open up the perspective of parties involved and their interpretations on specific cases. Consequently, this offers the possibility to put them in relation to each other and to achieve negotiations for appropriate problem solutions (Düttorn 2014, Darmann-Finck 2010a, Hülksen-Giesler 2008). Competences of this kind have a central significance in the serious game ›Take Care‹.

According to the current state of scientific reflection, understanding of individual cases does not exclusively take place via verbal communication with recipients of help or their environment, but is based fundamentally on elementary understanding of physical and bodily awareness in nursing care situations that may accompany the rational-linguistic exchange (Hülsken-Giesler 2016a, 2008, Darmann-Finck 2010b). Body experience of this kind can hardly be simulated by virtual case simulations, at least according to the current state of technical development. In the context of a digitally supported serious game, however, an attempt can be made to provoke physical and bodily reactions in the players. Nevertheless, an important prerequisite is that the players are intensively involved in the course of the game (immersion and a feeling of flow) and allow themselves the corresponding emotions. In the course of the game, physical and bodily reactions can be used as an opportunity to reflect on the fundamental importance of physical and bodily awareness for nursing care. The learner's awareness towards their own feelings can be sharpened and brought to reflect up on.

Competence of hermeneutic understanding of individual cases, taking into account values and preferences based on socialization and biography, multi-perspective possibilities of interpretation and the spectrum of one's own physical and bodily awareness.

Example from the serious game ›Take Care‹:

Due to her dementia, resident Roswitha Meierhans believes that the player is a new employee in her hairdressing salon. Now, the player has the task of using her/his knowledge on biographical work and validation in order to open up the situation, to interpret it appropriately and to respond to the resident in a way suitable to the situation. The player has the choice between different dialogue options, the response affects the further course of the game.

Competences in formation on critical judgement can only be developed on the basis of a successful understanding of the individual case, and following the competence model on which this paper is based. Within the framework of forming a critical judgement, professional caregivers are called upon to include ethical and moral references as well as social and socio-political influences in processes on decision-making in nursing care (Weidner 2011). In this context, the aim is to identify and reflect on dilemmas, tensions and contradictions in the nursing profession without completely blocking professional action.

At this advanced level, learners are able to reflect on even highly ambivalent care situations and negotiate possible options for action with those involved. The challenge is to establish the ability to act under conditions of forced decision making for various acting options and (at least potential) obligation to justify them, at the same time the consequences of possible actions cannot be fully understood. This situation requires caregivers to obtain a critical and reflected perspective (Darmann-Finck 2010a).

Competence for the ethical-moral and (self-)reflected justification of nursing activities.

Example from the serious game ›Take Care‹:

The resident Gabriele Hansen is confused and sad. Where is her friend, with whom she has a date for a coffee? Due to a smart use of the nursing documentation, the player has the information that Mrs. Hansen's friend has passed away. She/he is now faced with the ethical dilemma of confronting Mrs. Hansen with this truth and thereby possibly worsening her mood further or expressing a lie regarding her friend's condition and thereby possibly putting Mrs. Hansen in a more positive mood.

Competences are also shown as performative actions in contexts of using serious games (here ›Take Care‹). Decisions in the course of the game (e.g. with regard to the selection of (virtual) dialogue partners, dialogue offers or specialist literature) give teachers in nursing care a fundamental reason to address these in the attendance phases of nursing education, to ask for reasons if necessary and to enter into specialist discourse with the learners on specific questions about nursing care. The extent to which the decisions in the game actually correspond to the players' level of competence cannot be determined at this stage with regard to digital gaming behavior alone (research is currently in progress). Trainees in nursing care may use ›Take Care‹ to test themselves, to try out alternative decisions or to consciously choose problematic solutions. It remains that the serious game can illustrate complex care situations in a playful way, makes the challenges of decision-making in care perceptible, offers different sources of information for decision-making as well as their systematic relationship to each other a subject for discussion, and thus offers a reason to reflect on decision-making in nursing care with alternative options for action.

3.4 Nursing Didactical Heuristics

In order to transfer the briefly outlined competence model into contexts of digitally supported teaching and learning, topic-specific heuristics were created that relate thematic and competence-related aspects to each other. The thematic areas selected for the learning game (see Figure 1 and in detail Chapter 4.2.1) were derived by interviewing teachers, learners and nursing staff as part of a needs and requirements analysis. The question was asked which situations with people with dementia were experienced as particularly striking and which competences nursing staff and trainees in nursing care must have in order to work appropriately with people with dementia in situations of this kind. Furthermore, the results of scientific reviews on caring people with dementia as well as an analysis of the guidelines and curricula of health care and nursing care for children and elderly in the states of North Rhine-Westphalia and Rhineland-Palatinate were taken into account.

The systematization of this preliminary work was carried out along the lines of the “Interactionist Nursing Didactics” (“Interaktionistische Pflegedidaktik”) according to Darmann-Finck (2009, 2010a, 2010b). Target dimensions are addressed:

- Science-based explanation and instrumental solution for nursing and health-related problems (technical interest in knowledge),
- Formation of judgement, communication in nursing care situations (practical interest in knowledge),
- Critical reflection on the paradoxical and restrictive social structures of nursing care (emancipatory interest in knowledge).

With this approach (see also Chapter 3.3), the nursing didactic aims to open up situations and topics relevant to nursing in the perspective of a technical, a practical and an emancipatory interest in knowledge about the caregivers’ perspective (trainees in nursing care and/or nursing professionals), patients and relatives, institution and society as well as nursing activities (Darmann-Finck 2009). Different perspectives on the nursing situation emerge, which allow different case interpretations and may also lead to different problems and decision-making processes (see Table 1).

Objective/ aim	Caregivers	Patient/ relatives	Institution/ society	Nursing care action	Reference to ›Take Care‹
Technical interest of knowledge	Explaining the caregivers' behavior and identifying instrumental solutions to the problems/"crises" of caregivers	Explaining the residents' behavior and identifying instrumental solutions for (self-) care tasks	Explaining and identifying instrumental solutions for the institution's and system's tasks	Explaining and identifying instrumental solutions with regards to supporting residents in self-care tasks	Competence of dealing with structured knowledge of standards
Practical interest of knowledge	Understanding of and agreement on one's own biographically determined interests, emotions, motives and values	Understanding of and agreement on the patient's biographically determined interests, feelings, motives and values	Understanding of and agreement on the health care institution's interests and motives	Understanding of cases/ forming of judgement and communication	Competence of hermeneutic understanding of individual cases
Emancipatory interest in knowledge	Uncovering of socially influenced inner conflicts	Uncovering of socially influenced inner conflicts	Uncovering of social contradictions	Uncovering of contradictory structural principles of nursing care action	Competence of formation on critical judgement

Table 1: Nursing care didactical heuristics and competence model ›Take Care‹ (according to Darmann-Finck, 2009)

In a next step, topic-specific heuristics for each main topic in ›Take Care‹ were created on the basis of the identified topics and in orientation to this abstract care-didactic heuristic (see exemplary for the main topic 'housing' in Appendix 1). In order to give the learning game an authentic character, relevant case sequences from interviews with care givers, teachers and learners were placed in front of each topic area. These sequences also formed an important basis for the development of storylines and dialogues and thus for the content of the serious game ›Take Care‹, which is presented in more detail in the following chapter.

4. Course of the Game, Game Characters and Storyline

›Take Care‹ involves different game characters and follows a flexible, but in the basic structure predetermined course of the game along different storylines. Future work on further development of ›Take Care‹ aims to make the game more dynamic and flexible. Additionally, more perspectives and new nursing care characters should be integrated in the game in order to increase gaming fun, to give the players more options for action and to increase the complexity of the game.

4.1 Course of the Game

›*Take Care*’s course of the game is fundamentally predetermined, due to the game development’s current technical status and the financial possibilities. This applies in particular (still) to the dialogue options to design the interaction between the virtual game characters. Players can influence the actual course of the game by making decisions regarding the dialogue design, but they always remain within the framework of the defined basic structure and the predefined dialogue options. In order to make appropriate decisions in the course of the game, the players must clarify the situation (e.g. What is the problem? Which structured knowledge of standards is available to solve the problem? Which interpretations, demands, and preferences result from different perspectives? etc.). To clarify the situation, players can use a variety of sources, e.g. conversations/ dialogues with the (virtual) game characters involved (e.g. the recipient of help, relatives, experienced colleagues) or, for example, consult the library. However, the players can also leave these sources untouched or even deliberately ignore them. The corresponding decisions flow back into the game as in-game feedback.

The player experiences direct consequences on decisions and actions in the virtual learning environment, as further (virtual) game characters react to the actions and statements. This enables the players to critically analyze their own actions already during the course of the game. A (possibly also temporally decoupled) reflection with teachers and/or the entire learning group offers various didactic possibilities. The trainees in a learning group experience the same or similar situations during the course of the game, which, however, can develop into different scenarios (depending on the respective decision paths) and possibly lead to different results. The special importance of considering situational contexts for the further course of the game holds out the prospect of players becoming involved in aspects of situational casework and, if necessary, competences in hermeneutical individual case understanding being promoted. Finally, competences on critical judgement are required, as the players in their role in the virtual working world must constantly make realistic decisions that require critical-reflexive competence, as the case simulations are multidimensional and multi-perspective.

The tree of dialogues in Fig. 3 shows the game sequence's dialogue options exemplarily. Blue circles indicate the player's response options; orange circles indicate the resident's responses. Players always have at least two options to choose from. The decision's effects for certain dialogue options become visible through the resident's reactions in the course of the game. Depending on the options chosen, different situations may arise in the further course of the game.

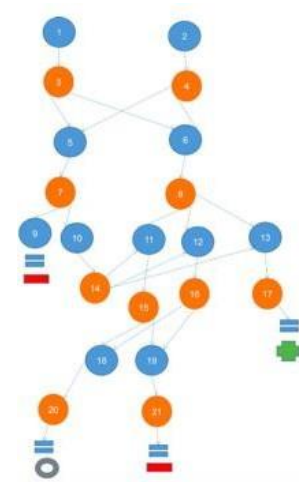


Figure 3: Tree of Dialogues

4.2 Game Characters

The virtual game characters correspond to the main actors in a long-term care environment: professional caregivers, care recipients (residents), the resident's relatives and an accompanying family doctor.

4.2.1 The Virtual Nursing Home's Nursing Team

The virtual nursing home's nursing team in ›Take Care‹ consists of four characters: Ulrike Jahn, Hubert Klein, Stefan Pohl and Sabrina Meier.

Ulrike Jahn is the epitome of routine among colleagues in the nursing team. After 40 years in nursing care, she longs for her well-earned retirement. Physically, the job has taken a lot out of her. She does not like major innovations and changes. Ulrike Jahn has difficulties with teamwork and additional commitment beyond the closer nursing work.



Ulrike Jahn

- 61 years old
- Hobbies: Window Color, animal movies, cooking, lazing around
- has been working in the care sector since 40 years and in the dementia residential sector since five years

Punctuality is very important to her. Despite her rather grumpy nature, she shares her professional experience and is always available to answer technical questions. However, she takes great care to keep private and professional matters strictly separate.

Hubert Klein

- 45 years old, has a partner and a daughter (9 years old)
- Member of DbfK and Ver.di (german labor unions)
- geriatric nurse, 20 years of professional experience in four institutions of long-term care and in ambulant care services
- Practice Instructor



If there are problems at work, it is advisable to contact Hubert Klein. As a labor union representative (german: Gewerkschaftsvertreter), he is always happy to provide advice and assistance. In his long and wide-ranging professional life, he has acquired an enormous amount of specialist knowledge

which goes far beyond the normal standard. As a practical instructor he likes to share his knowledge and helps where he can. At the moment, however, he is disillusioned by the situation in the nursing home. He often has to step in and has hardly any time for practical instructions, the integration of scientific findings and work with relatives.

Due to his casual and social nature Stefan Pohl is “Everybody's Darling” in the facility. For the avowed punk, neither status nor possessions count. The human being is the most important for him. Contact with the residents gives him a lot of pleasure and he is very well-liked by everyone. However, he avoids administrative tasks if possible. If you are not intimidated by his colorful and changing hair, you will find Stefan a good colleague and friend.

Stefan Pohl

- - 28 years old, single
- - geriatric nurse since 8 years
- - Punk, likes the lifestyle, music and the scene



On the day the game starts, Sabrina Meier starts her three-week social internship in the nursing home “Sonnenaufgang”. However, she does not understand the meaning of such an internship. She just wants to finish school quickly.

Sabrina Meier

- 16 years old
- pupil at the municipal secondary school
- completes a three-week internship in the nursing home
- has six siblings
- interests: belongs to the gothic scene, mangas, drawing, mythical creatures



Sabrina Meier comes from a simple background and has six siblings. Her parents are overwhelmed with the domestic situation. Therefore, Sabrina has never learned to deal with authority or criticism.

As a member of the gothic scene she is very interested in the themes of death and transience. This is also her motivation for the internship in a nursing home. She wants to experience her favorite topics “live”. She likes mangas and draws anime herself. Another preference of hers are mythical creatures. Her favorite animal is the unicorn.

4.2.2 The Virtual Nursing Home's Residents



Gerald Wiedenstädt

- 86 years old
- widow, no children
- previous profession: Manager at Deutsche Bahn (German railway company)
- lives in the nursing home since 10 years

Organizing and delegating – these are Gerald Wiedenstädt's specialties. As a former manager he likes to take things into his own hands. Once he has set his mind to something, other people's sensitivities can sometimes be neglected. When something doesn't suit him, he can be very hot-tempered.

Order and functionality are very important for him. But Gerald Wiedenstädt also has a soft side. A lively conversation about his beloved steam locomotives always brings a smile to his face. The loss of his wife is still very painful. Not having children who come to visit him often makes him sad. In Gabriele Hansen he has found a reliable person.

Gabriele Hansen is the good soul among the residents. As a caring mother and grandmother, she always tries to make her fellow residents feel good. This is also reflected in her need to always beautify her surroundings.



Gabriele Hansen

- 74 years old, two adult children (Uwe & Ulf), one grandchild (Finn)
- former profession: gardener
- moderate dementia
- since six months in the nursing home

The former gardener is particularly fond of flora and fauna. She is sad that she was not allowed to take her cat with her when she moved to the nursing home. Now, the cat lives with her son. In Gerald Wiedenstädt she has found someone to care for.

Due to her dementia disease, phases occur in which she is not locally oriented. She often wants to go home and always has a packed suitcase.

If there is anything to figure out in nursing home “Sonnenaufgang”, Alfred Schneider is not far away. As a former electrician, he enjoys making anything that doesn't work properly – defective windows or sockets – into his project. This is not always without danger for him. He is always active and it never gets boring with him. Due to his illness, Alfred Schneider is sometimes not oriented

Alfred Schneider

- 83 years old, married (with Hertha Schneider)
- former profession: electrician
- previous hobbies: mountain climbing, alpine sports
- advanced dementia of the Alzheimer type, hypertension



to place or time or to his person. His wife is a great support for him. From his past journeys and hobbies, he has many souvenirs in his room. Lately he often does not want to eat.

Roswitha Meierhans

- 52 years old, married (to Dieter Meierhans), three children (23, 20 and 17 years old)
- former profession: master hairdresser with own salon
- Alzheimer's dementia
- Diabetes mellitus type II and a chronic wound
- since five weeks in the nursing home



Roswitha is the beauty queen in nursing home “Sonnenaufgang”. When it comes to styling and good looks, the trained master hairdresser always has a good advice. A neat appearance, politeness and etiquette are very important to her. Roswitha Meierhans recently moved into the facility and is still getting used to it.

She finds it difficult to let her children and her husband go after visits. It makes her sad that her daughter hasn't visited her for weeks. Her orientation fluctuates with the course of the day. It happens that she thinks that nurse Ulrike Jahn is her friend Heike. Despite her diabetes, Roswitha Meierhans has a preference for sweets, especially cream cakes.

4.2.3 The Resident's Relatives

Hertha Schneider is very worried about her husband. She feels guilty about putting him in a nursing home. She is very worried about her husband's frequent hospitalizations since he moved into the nursing home. She also expresses this towards the nursing staff.



Hertha Schneider (Alfred Schneider's wife)

- 73 years old
- has difficulties adjusting to her husband's situation
- change of role in marriage (has to take responsibility now)
- because of that she is in psychological aid

Dieter Meierhans maintains a loving relationship with his wife. He is very concerned about



**Dieter Meierhans
(Roswitha Meierhans' husband)**

- 57 years old
- banker, makes many business trips abroad
- can only visit Roswitha at the weekend

whether she is well cared for in the nursing home. Since he feels very bad that he had to bring Roswitha there, he is considering taking early retirement and caring for his wife. These inner conflicts sometimes make him very angry.

4.2.4 More Game Characters

Dr. Alois Sommer

- - 57 years old
- - specialist for internal medicine
- - since 20 years in a small family doctor's practice
- - 1 x weekly consultation in the neighboring nursing home
- - contact if required, home visits by arrangement
- - characteristics: comfortable type, does not stress
- - hobbies: cycling and gardening



4.3 Main Topics and Storyline

The serious game ›*Take Care*‹ addresses topics concerning general and dementia-specific aspects of nursing care and combines them with specific objectives for the learners. The main topics are presented to the players in the course of the game within the framework of the story (storyline).

The course of the game is structured according to the virtual caregivers' working days and shifts. Each working day addresses different topics along the stories, which can also extend over several working days and overlap in the course of the game. The course of the game is now described below from the virtual caregiver's perspective (here referred to as player), who plays the serious game ›*Take Care*‹.

Table 2: Description of the storyline

Day/ Main topic	Beginning of the storylines/ plots	Duration of the stories
<u>Day 1:</u> Tutorial on the serious game, nursing care planning and collecting information	Introduction A short tutorial explains the serious game's basic functions. The player has her/his first day as a certified nurse in nursing home "Sonnenaufgang". She/he first gets to know the living area as well as her/his colleagues and finally the residents. She/he also gains an insight into the nursing documentation system and can familiarize herself/himself with the bookshelf, which contains informative texts on typical nursing challenges in the nursing home.	Day 1
<u>Day 2:</u> Healthy diet	Alfred Schneider's diet Mr. Schneider refuses to eat on day two. The player discusses this with the team and possible consequences are considered. As the story continues, Mr. Schneider faints and is taken to hospital. He is then taken back to the nursing home by his wife. Mr. Schneider refuses to eat again because he is in pain.	Day 2-5 and day 7
	Roswitha Meierhans' diet Mrs. Meierhans would like to eat cream cake on day two despite her diabetes mellitus type 2. The player does not know about her diabetes. In the further course of the game, her blood sugar levels rise, which is why the player injects insulin and advises Mrs. Meierhans on her diet.	Day 2 and 3

	Building a relationship between Gabriele Hansen and Gerald Wiedenstädt Mrs. Hansen and Mr. Wiedenstädt seem very lonely and are introduced to each other, which meets great interest on both sides. The player can support the development of the relationship between Gerald Wiedenstädt and Gabriele Hansen by favorably selecting the dialogue options. In the further course of the game it is discussed whether a flirtation should be supported or prevented by the team.	Day 2-5
Day 3: Housing and housing forms	Alfred Schneider's housing Mr. Schneider is standing on a chair and wants to change a light bulb. He is neither oriented towards time nor place. The player has the opportunity to intervene calmly. If she/he fails to do so, Mr. Schneider falls off the chair. The player then has the option of reacting adequately and calling for help or of covering up the accident and putting Mr. Schneider to bed without further intervention.	Day 3
	Talking to Roswitha Meierhans' relatives Mrs. Meierhans is dissatisfied with her personal hygiene when her husband, Dieter Meierhans, enters the bathroom. As things develop, there is a delicate discussion about Mr. Meierhans' indecisiveness and about his wife's care in the nursing home.	Day 3-7
	Talking about the cat Mrs. Hansen feels lonely and at the same time worries about her cat, which has been living with her son since she moved in, now has to go to the animal home. In the further course a possible move of the cat into the nursing home is discussed.	Day 3-7 (in case the cat moves in)
Day 4: Clinical picture (clinical picture of dementia and the different forms' symptoms)	Gabriele Hansen's pain Mrs. Hansen has pain in her back. The player responds to it, assesses the pain and reacts with pain medication and non-medical interventions.	(Day 4 -7)
	Validation Gabriele Hansen In the morning, Mrs. Hansen is convinced that she will be picked up by her husband and is therefore sitting on packed suitcases. The clinical picture of dementia and the concept of validation is explained to Hubert. In the afternoon, Mrs Hansen is standing at the window and awaits her sons returning from school. The clinical picture of dementia and the concept of Validation is explained to Hubert.	Day 4

Day 5: Biography work	Roswitha Meierhans' pain Mrs. Meierhans has a wound on her toe which she contracted while cutting her nails. The player can react adequately or ignore the wound.	Day 5
	Biography work Roswitha Meierhans' inheritance Mrs. Meierhans is unhappy because her daughter has not visited for three weeks. In a conversation with Stefan Pohl, the player learns that there are disagreements about the inheritance. The problem is addressed in a conversation with Mr. Meierhans.	Day 5-7
	Biography work Gabriele Hansen Mrs. Hansen wakes up from a nightmare about her escape from East Germany and tells the player about it. The afternoon shift learns about the situation solely from the documentation.	Day 5
	Friendship between Ulrike Jahn and Roswitha Meierhans Mrs. Meierhans thinks that the nurse Ulrike Jahn is her friend Heike Kaiser. Ulrike reacts to Mrs. Meierhans and plays her role as "Heike".	Day 5 and 6
Day 6: Legal framework / technical assistance systems	Alfred Schneider's pain Mr. Schneider refuses to perform oral hygiene due to pain. The player has the possibility to give painkillers and to perform the oral hygiene afterwards.	Day 6
	Talking to Alfred Schneider's relatives Ms. Schneider seeks the conversation with the player several times in the course of the game. She is worried about her husband's frequent hospitalizations since moving in and also expresses her concerns about moving into the nursing home.	Day 6 and 7
	Roswitha Meierhans' tracking device Mr. Meierhans has brought his wife a GPS watch as a gift. He is afraid that Mrs. Meierhans will leave the ward when she wants to go to her hairdressing salon and he hopes to be able to prevent her from getting lost with this watch. During the course of the day, the player talks to both, Mrs. Meierhans and Mr. Meierhans, about the advantages and dangers of using such a technique.	Day 6 and 7
	Gabriele Hansen's and Gerald Wiedenstädt's tracking devices Mrs. Hansen and Mr. Wiedenstädt want to leave the living area in the morning. The team discusses the possibilities of solving Mrs. Hansen's and Mr. Wiedenstädt's runaway tendencies and also considers ethical aspects of using tracking devices.	Day 6

	Specifically, the team discusses the MEESTAR model on the basis of which they want to come to a decision for or against the introduction of tracking systems.	
<u>Day 7:</u> Validation	Alfred Schneider's and Gerald Wiedenstädt's dispute A dispute arises between the residents Alfred Schneider and Gerald Wiedenstädt, because Mr. Schneider (disoriented) is wearing Mr. Wiedenstädt's beloved railway cap and does not want to give it away.	Day 7
	Roswitha Meierhans' challenging behavior Mrs. Meierhans wants to go to her hairdressing salon. The player has the option of letting her go (will be discussed later) or stopping her.	Day 7

5. Suggestions for the Pedagogically-Didactically Justified Use of ›Take Care‹

The serious game ›Take Care‹ can also be played by learners independently of systematic didactic embedding and reflection, which possibly also provides learning opportunities in these contexts. Nevertheless, we believe that the development of learning potential can only be achieved by the didactically justified integration of the serious game into systematically founded educational processes and presence-based reflection.

The following table is intended as a guide to suggest ideas for integrating the serious game ›Take Care‹ into the classroom. It does not claim to be complete and offers room for further creative ideas for integration within the framework of professional pedagogical-didactic activities.

Table 3: Suggestions for the pedagogically-didactically justified use (own table)

Possible implications	Competence/Skills model			Suggestions for didactic implementation
	Competences of dealing with structured knowledge of standards	Competences of hermeneutic understanding of individual cases	Competences of formation on critical judgement	
Getting to know the interior arrangements of a living area in a long-term care facility	Rooms, room arrangements, function of the rooms, emergency call system, legal and hygienic conditions	Individual residents' room design according to personal needs	critical questioning: wipeable furniture and modern ("sterile") furniture vs. private wooden or upholstered furniture, age-appropriate design of the living area	Brainstorming according to game sequence, guided class discussion, discovering learning through own research, group work, group puzzle as backup
	<ul style="list-style-type: none"> • Bookshelf: Living with people with dementia • Tutorial early shift, day 1, 06:00 a.m., • Tutorial late shift, day 1, 03:00 p.m., • Dialogue: Hubert Klein, day 3, 06:00 p.m. 			
Getting to know the structured daily routine	Structured daily routine for people with dementia, time management, handling material from an economic point of view, nursing care systems for organization	Individual adaptation to the daily routine in relation to the residents (questioning the institution's routines)	Reflection on your own time management (fulfilling tasks and observing the day structure in the game)	Teacher's presentation on nursing care systems for organization, act out a whole shift or partner/small group work on selected scenes, followed by guided class discussion
	<ul style="list-style-type: none"> • Bookshelf: living with people with dementia • Bookshelf: day and night reversal among people with dementia • Dialogue: Gabriele Hansen, day 2, 06:00 a.m. • Dialogue: Gerald Wiedenstädt, day 4, 10:00 a.m. 			
Getting to know the residents, relatives and nursing staff,	Psychological models of communication: Schulz von Thun und Watzlawick,	Appreciation and respectful treatment of individual residents, relatives and staff	Strengthening the own conflict ability, enhancing professionalism,	Introduction to the lesson: critical scene beamed onto a screen and evaluated in the classroom

communicating and dealing with them	method of validation, reality-oriented training		promoting social and personal competence	according to the task, guided discussion in the classroom according to the task, small group work on specific characters or scenes in the game, then presentation in the classroom
	<ul style="list-style-type: none"> • Bookshelf: Validation/integrative validation • Bookshelf: Communication and dementia • Dialogue: Gabriele Hansen, day 2, 09:00 p.m. • Dialogue: Roswitha Meierhans, day 7, 06:00 a.m. • Dialogue: Gerald Wiedenstädt, day 4, 02:00 p.m. • Dialogue: Ulrike Jahn, day 4, 03:00 p.m. 			
Biography work	Importance of biography work in professional settings	Including biography work in different nursing care situations working with individual residents	Strengthen decision making and judgment by reflecting individual sequences in the game	Processing specific nursing care situations with a partner or in a small group work according to the task, presentation of the results in the classroom
	<ul style="list-style-type: none"> • Bookshelf: Biography work • Dialogue: Gerald Wiedenstädt, day 5, 09:00 a.m. • Dialogue: Roswitha Meierhans, day 1, 07:00 a.m. • Dialogue: Alfred Schneider, day 1, 09:00 a.m. • Dialogue: Gabriele Hansen, day 5, 06:00 a.m. 			

Use of assessments	Importance and function of assessment tools	Mini Nutritional Assessment - MNA, using pain assessments with Alfred Schneider and Gabriele Hansen in the game	question the use of the assessment instruments, check time management in the game's application	Teacher's presentation on assessment instruments, use of these in the game (individual work), guided class discussion for use in the game with regard to time management
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	<ul style="list-style-type: none"> • Bookshelf: Pain in people with dementia • Dialogue: Ulrike Jahn, day 2, 08:00 a.m. • Dialogue: Hubert Klein, day 5, 11:00 a.m. • Dialogue: Hubert Klein, day 6, 01:00 p.m. 			
Nursing care documentation	legal and nursing aspects of nursing documentation, nursing process, nursing planning, SIS (german: Strukturierte Informationssammlung = structured collection of information)	Write nursing care reports for individual residents, apply care planning to individual residents in the game	Observe time management for documentation, critically observe residents and situations in the game, sharpen the "clinical" view	Writing care reports during the game (individual work), and then reflecting on them in partner work or small groups
	<ul style="list-style-type: none"> • SIS nursing care documentation in the game • Write SIS nursing care reports in the game yourself • Dialogue: Ulrike Jahn, day 3, 09:00 a.m. • Dialogue: Hubert Klein, day 2, 07:00 a.m. 			
Case work	Building relationships at a professional level	Knowledge of the self-care deficit and resources of individual residents, individual integration of biography work and models of communication	Critical questioning of the selected answers according to the consequences shown in the game, meeting challenging behavior appropriately, critical questioning the use of tracking systems	Planning of a series of lessons on a specific case from the game: use of heuristics (cognitive interests of characters) or the phenomenological approach according to Walter from action to learning situation, brainstorming, scenic play,

				guided class discussion, problem-oriented learning, group work, presentation of results
	<ul style="list-style-type: none"> • Bookshelf: Challenging behavior • Bookshelf: Overview of tracking devices • Group dialogue on tracking systems, day 6, 03:00 p.m. • Group dialogue on the love story, day 5, 01:00 p.m. 			

	<ul style="list-style-type: none"> • Dialogue: Alfred Schneider, day 1, 03:00 p.m. • Dialogue: Stefan Pohl, day 5, 09:00 p.m. 			
Advising and counselling	Knowledge of person-centered and systemic counselling, nursing care advice: biography-oriented diagnostics, Wittener tools	Giving advice for patients and relatives in various nursing care situations: (Roswitha Meierhans: advice on diabetes and chronic wounds, Alfred Schneider: advice on fluid balance, Hertha Schneider: advice on her husband's nursing home situation)	Critical reflection of giving advice and counselling in the game	Practice counselling and giving advice in partner work, approach on personal and systemic discussion, encourage a change of perspective
	<ul style="list-style-type: none"> • Dialogue: Roswitha Meierhans, day 3, 06:00 p.m. • Dialogue: Roswitha Meierhans, day 4, 10:00 a.m. and 01:00 p.m. • Dialogue: Hertha and Alfred Schneider, day 3, 12:00 noon • Dialogue: Hertha Schneider, day 4, 04:00 p.m. 			

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Appendix

Appendix 1: Nursing didactic heuristics for the main topic 'housing' (exemplarily)

Appendix 2: The serious game ›Take Care‹'s objectives for competences regarding the different plots

Appendix 1: Nursing didactic heuristics for the main topic 'housing' (exemplarily)

In order to give the serious game an authentic character, the topic-specific heuristics were developed taking into account relevant interview sequences with caregivers, teachers and learners. The sequences also formed a basis for the development of stories and dialogues and thus for the serious game ›Take Care‹'s content. Here are some examples of interview sequences on the topic 'housing').

Housing

The person moves in, is very restless, is always looking for something and we notice that we get him reasonably calm. Then the wife visits, but she leaves again after an hour and after that there is 'Halli Galli' again. The same every day. Then we talk to the relatives and say "Please, don't visit for a few days", thus giving the person a period of settling in. Many people accept this, some do not. And with those who do accept it, we notice that after a while it improves. Then they can also come back to visiting normally. (Pl. 2, T. 165)

Various patients with dementia have this walking tendency. Then we had a patient who noticed "I am not at home here" and he wanted to go home. Then he wandered off and I thought "I'm not holding him back, I'm accompanying him". We were walking for an hour and a half in the village and in different places he thought he was at home. It was not easy for me as he rang the bell, and the door opened. I tried to make contact with the lady who opened the door. We went inside the house and he looked around and saw "No, I'm not at home here". Then we moved on. But I noticed this man was getting calmer and calmer. I let him go. Eventually, he got tired. I could walk him back to the facility where he lived. I thought: "If only you had the time to really guide people on their own journey." For the person on the journey, it was good. (Sch1_L, T. 48)

Then you have to say, "What about money? I don't have the timetable in my head. I don't go by train. We're so far away from here." When you say to this person, "You live here." They don't live with us. 90% of our residents don't live here. (Pfl2, t. 71)
Although they live here. You can't say "you live here now". Then Mr. W. answers straight forward "No, I live in Cologne. I don't live here! I'm visiting." (pl2, pg. 73)

We have a resident who always joins the cleaning lady on the cleaning cart. She also enters the rooms, or "Coming now?", if it takes too long. Then she gets a cloth, and she cleans the handrail, later she is back at the cart. Then she's tired, takes a nap by the cart, then the cleaning lady comes back. So, she literally takes her with her. That's nice to see. (Pfl2, pg. 82)

People need a task, people need to get the feeling they are appreciated, they are SEEN. Many are happy to help set the tables, or to get a broom for cleaning. Of course, this is not possible with everyone, but there are always residents who help, who also enjoy it. I think this is also a form of appreciation. (Pfl2, T. 83)

It was about enthusing people in the context of an activation. A student was making Christmas decorations. She collected pine cones and twigs, bought some wire and a snow can. She sat them down at a table and had the kitchen serve them oranges and tea. Set up a recorder. There were seven ladies. I've never seen so many old people in my life so happy at one time, singing Advent songs at the top of their lungs, and a lady in tears squeezed the student and said: "I've never had such a beautiful St. Nicholas Eve in my life." I believe that students need to be told, "Do this more often." Now you've done it not only for one resident, but for seven. One expressed it, but you could see that everyone else felt just as good. (Sch2_L, T. 67)

We have two who cannot adequately express themselves verbally. So, they string words together. They were sitting next to each other and you had the feeling they were two old ladies in a café, whispering all the time. Not a word could be understood. It was just the tone of "shhh". There wasn't a single word that made any sense. But they were sitting there the whole time, as if they were talking about the others. They got along fine. (Pf1, T. 67) Or Mrs. B. with Mrs. H. apparently, they communicate with each other. Of course, Mrs. H. does not understand Mrs. B. and vice versa. Wasn't possible before, they didn't even look at each other. (Pf1, q. 70) That is the problem that dementia develops, in one case faster, in the other less. They were friends, on first-name terms. They always sat together on the sofa, and then they made plans to escape: "You press the button up there, and I can operate the door handle." Also, still adequate, because they could do it so far. One of them has now become so diminished and now the other one of them no longer understands that she uses such strange words. (Pf1, pg. 76)

Nursing didactic heuristics for the main topic 'housing' (according to Darmann-Finck 2009, 2010a, 2010b)

Caregivers	Patient/ resident/ relatives	Institution/ healthcare system	Nursing care action
Competence of dealing with structured knowledge of standards (Students name/ explain/ examine e.g...)			
	The trainees describe the principles of moving into a facility for people with dementia.	The trainees name administrative guidelines for the residents' move into the facility and the health system.	The trainees identify the different steps of action/procedure for moving into a facility for people with dementia.
	The trainees recognize occupation and (everyday) activity as a component of housing <ul style="list-style-type: none"> Groups and offers e.g. handicrafts, memory groups, seasonal activities Everyday activities e.g. household chores 		The trainees describe the steps of action for designing (everyday) activities, e.g. household tasks.
		The trainees plan the following recommendations for the housing situation of people with dementia:	"Design the living space and the living environment to suit dementia." (Ministry of Education, Women and Youth, 2005, p. 62)

		<ul style="list-style-type: none"> • “Convey a sense of security and safety • Ensure clarity and maximum freedom of movement • Maintaining skills and functionality • Establish a connection and continuity to the previous life context and radiate a warm, homely atmosphere • Stimulate patients and adjust lighting, temperature, odors and sounds to their needs • provide opportunities for retreat • Supporting orientation • Encourage visits from relatives and social interaction • Enabling contact with animals” (DEGAM 2008; Lawton, et al. 1997) 	
Competence of hermeneutic understanding of individual cases (Students perceive/ understand/ communicate about e.g. ...)			
<p>Trainees/nurses admit conflicting feelings in the care of people with dementia, e.g.</p> <ul style="list-style-type: none"> • Compassion • Overload 	The trainees identify the resident's move-in as a possible crisis (sadness, confusion, fear, tendency to run away).		The trainees manage the familiarization phase of people with dementia in a person- and situation-specific way.
	The trainees value the residents for activities experienced as meaningful (e.g. housework or activities) and convey a feeling of joy and gratitude.		
	The trainees differentiate the different perspectives and feelings of people with dementia from living alone to living in a group:		“Use individually appropriate forms of care

	<ul style="list-style-type: none"> • <i>Opportunities: no longer being alone, making new contacts</i> • <i>Boundaries: showing consideration for the other residents, feeling disturbed</i> 		and design the living environment in a problem-oriented manner.” (Ministry of Education, Women and Youth, 2005, p. 24)
	<i>The trainees recognize unfavorable conditions for people suffering from dementia (difficult orientation due to winding paths), stress situations (noise from open halls) or hazards (e.g. open stairs, many exits and entrances) (Heeg, 2003, p. 106).</i>	<i>The trainees explain legal and financial aspects of different housing concepts for people with dementia and evaluate their suitability for this target group.</i>	<i>“Counsel caregivers and relatives with regard to possibilities and limits of home care and plan, carry out and document measures appropriate to the situation” (Ministry of Education, Women and Youth, 2005, p. 61)</i>
Competence of formation on critical judgement (Students reflect on the contradiction between e.g...)			
<i>The trainees differentiate the facility as the person with dementia's home vs. the facility as the caregivers' working environment</i>	<i>The trainees differentiate the people with dementias conflicting feelings such as "feeling at home vs. being a stranger".</i> <i>The trainees differentiate the relatives' perspective of: Long-term living & accommodation vs. the person with dementia's perspective: being a visitor.</i>	<i>The trainees assess the relationship between autonomy and security; reflection of binary coded dual orders of home and institution, of questions about transition areas, about crossing the border in an institutional context.</i>	<i>The trainees evaluate health policy and economic reasons for the development of different care concepts for people with dementia.</i>
<i>The trainees evaluate their own ideas of human dignity, privacy and individuality using the example of dealing with different housing and care concepts for dementia patients.</i>	<i>The trainees include aspects of space and well-being, orientation and identity in their perspective on housing. They recognize and accept the subjective experience in terms of e.g. security, safety, privacy and retreat, public or community.</i>		

Appendix 2: The serious game ›*Take Care*‹s objectives for competences regarding the different plots

1. Plot “Roswitha Meierhans’ healthy diet”

Competence of dealing with structured knowledge of standards

- The player perceives the residents’ state of health and explains the importance of knowing about the residents’ concomitant diseases for the nursing process.
- The player names the normal and critical parameters of diabetes mellitus
- The player measures the diabetics’ blood glucose levels and uses the normal and critical parameters to estimate the measured blood glucose levels.
- The player makes decisions based on the blood glucose levels measured (e.g. injecting insulin).
- The player explains special nutritional aspects regarding diabetes mellitus
- The player plans and conducts specific nutritional counseling for people with dementia who suffer from diabetes mellitus

Competence of hermeneutic understanding of individual cases

- The player is aware of Mrs. Meierhans’ state of health and acts appropriately to the situation.

2. Plot “Alfred Schneider’s healthy diet”

Competence of dealing with structured knowledge of standards

- The player develops strategies for dealing with the residents’ refusal of food
- The player identifies problems that arise in people with dementia in relation to nutrition:
- People with dementia have a high risk of unwanted weight loss and malnutrition
- The causes can be manifold, e.g. problems with chewing or swallowing, psychological stress, gastrointestinal complaints, short spans of attention

Competence of hermeneutic understanding of individual cases

- The player applies medicinal interventions to relieve Mr. Schneider’s pain.
- The player recognizes nutritional situations (e.g. pain situation), in which justified deviations from nutritional principles must be made

Competences of formation on critical judgement

- The player reflects his/her own behavior and the decisions made in the team.

3. Plot “Gabriele Hansen and Gerald Wiedenstädt are building a relationship”

Competence of dealing with structured knowledge of standards

- The player knows basic aspects of sexuality for people with dementia in nursing homes

Competence of hermeneutic understanding of individual cases

- The player recognizes the residents' emotional situation and deals with it empathically, taking into account the symptoms of dementia (e.g. acute confusion)

Competences of formation on critical judgement

- The player takes part in the discussion about the possible love between two residents and gives his/her opinion.

4. Plot "Alfred Schneider's housing situation"

Competence of dealing with structured knowledge of standards

- The player perceives emergency situations as such and develops appropriate reaction strategies to be able to react adequately in these situations.
- The player states the principles of building and shaping relationships with people with dementia.

Competence of hermeneutic understanding of individual cases

- The player develops strategies for dealing with criticism from relatives.

Competences of formation on critical judgement

- The player differentiates possible conflicting feelings of a person with dementia such as "feeling at home vs. being a stranger".
- The player assesses the relationship between autonomy and security; reflection on binary-coded dual arrangements of nursing home and institution, questions transitional spaces, questions crossing borders in an institutional context.

5. Plot "Talking to Roswitha Meierhans' relatives"

Competence of dealing with structured knowledge of standards

- The player names criteria for client-oriented care
- The player gives arguments on advantages and disadvantages of care in a nursing home and in the own home.
- The player describes the empathic contact with relatives and residents.
- The player describes roles of the different players in nursing care arrangement.
- The player names the relatives' different roles.
- The player develops strategies for dealing with conflict discussions and transfers these to his/her own professional acting.

Competence of hermeneutic understanding of individual cases

- The player applies these criteria in Frau Meierhans' care.

6. Plot "Talking about the cat"

Competence of dealing with structured knowledge of standards

- The player names and discusses aspects related to animals in the nursing home (e.g. hygiene, law, care)

- The player has knowledge about different possibilities of information on this topic (e.g. book shelf)

Competence of hermeneutic understanding of individual cases

- The player uses non-medical interventions to relieve Mrs. Hansen's pain.

Competences of formation on critical judgement

- The player reflects his/her own opinion in situational decision making (cat).
- The player stands up for his arguments/opinion in the team.

7. Plot “Gabriele Hansen’s pain”

Competence of dealing with structured knowledge of standards

- The player explains assessment instruments for external and self-assessment of pain and can apply them.
- The player names non-medical interventions for pain relief.

Competence of hermeneutic understanding of individual cases

- The player uses non-medical interventions to relieve Mrs. Hansen's pain.

Competences of formation on critical judgement

- The player reflects his/her own behavior and the decisions made in the team.

8. Plot “Gabriele Hansen: Validation”

Competence of dealing with structured knowledge of standards

- The player recognizes the signs of misunderstanding the situation in people with dementia
- The player knows the concept of Validation
- The player develops strategies for using Validation in interaction with residents.
- The player describes the symptoms and causes of dementia.
- The player explains strategies that help residents and their relatives to cope with everyday life with the disease.
- The player describes various non-medical interventions for dementia and selects nursing care-specific interventions according to the needs of each individual resident.

Competence of hermeneutic understanding of individual cases

- The player develops strategies for dealing with Mrs. Hansen in emotionally challenging situations (resident screams for a long time, is aggressive)

Competences of formation on critical judgement

- The player reflects on how society deals with dementia (practice of social isolation.)
- The player develops a resource-oriented (can sing, can partly remember) perspective on the residents.

9. Plot “Roswitha Meierhans’ pain”

Competence of dealing with structured knowledge of standards

- The player is familiar with assessment instruments for external and self-assessment of pain and can use them
- The player knows the basics of wound care and can apply them
- The player has knowledge about the characteristics of wounds in diabetes mellitus and takes these into account when observing wounds

Competences of formation on critical judgement

- The player reflects his/her own behavior and the decisions in the team

10. Plot “Biography work on Roswitha Meierhans’ inheritance”

Competence of dealing with structured knowledge of standards

- The player develops strategies for dealing with conflict conversations.
- The player contributes to the decision-making process with her own ideas.

Competence of hermeneutic understanding of individual cases

- The player responds empathically to Mrs. Meierhans’ concerns.

Competences of formation on critical judgement

- The player discusses the residents’ needs and concerns in the nursing team.

11. Plot “Biography work on Gabriele Hansen”

Competence of dealing with structured knowledge of standards

- The player explains the concept of Validation and applies when dealing with residents/ clients.
- The player perceives emotional crises in residents/clients and develops strategies for professional interaction.
- The player is aware of the residents’ needs and worries and discusses them with the nursing team if necessary.
- The player documents interactions concerning biography work in a situation-appropriate and timely manner (early shift).
- The player explains the documentation system and recognizes relevant information (late shift) for the individual and situationally appropriate care of the residents.

Competence of hermeneutic understanding of individual cases

- The player recognizes Mrs. Hansen’s emotional crisis and applies the strategies appropriate to the situation.

12. Plot “Ulrike Jahn’s and Roswitha Meierhans’ friendship”

Competence of dealing with structured knowledge of standards

- The player recognizes the signs of misunderstanding of the situation in people with dementia

- The player names the basics of the biography work, can explain and apply them.

Competence of hermeneutic understanding of individual cases

- The player takes the individual biography into account when dealing with the resident

Competences of formation on critical judgement

- The player reflects the residents' biography and the influence on current situations.

13. Plot “Alfred Schneider’s pain”

Competence of dealing with structured knowledge of standards

- The player names assessment instruments for assessing pain, can explain them and apply them
- The player explains the clinical picture of parotitis
- The player mentions non-medical interventions for pain relief.

Competence of hermeneutic understanding of individual cases

- The player applies medicinal interventions to relieve Mr. Schneider's pain.

14. Plot “Talking to Alfred Schneider’s relatives”

Competence of dealing with structured knowledge of standards

- The player explains criteria of empathic contact with relatives. He/she perceives the relatives' needs and develops strategies to respond to the perceived needs of the relatives
- The player speaks professionally (appropriate language, appropriate proximity/distance ratio) to relatives about concerns in the context of moving into a nursing home.
- The player describes the different roles in the care arrangement of people with dementia in long-term inpatient facilities and develops strategies to involve relatives in the care process.

Competence of hermeneutic understanding of individual cases

- The player applies the strategies for dealing with Mr. Schneider's relatives.

Competences of formation on critical judgement

- The player reflects on his own behavior towards relatives

15. Plot “Roswitha Meierhans’ tracking device”

Competence of dealing with structured knowledge of standards

- The player describes the principles of using technical innovations in nursing care of people with dementia.
- The player describes the possibilities of using technical innovations.
- The player names various tracking devices

Competence of hermeneutic understanding of individual cases

- The player balances risks and chances of using a GPS watch with Mrs. Meierhans.
- The player perceives Mrs. Meierhans' sceptical or even anxious perspective on the technical innovation.
- The player informs Mrs. Meierhans about the watch's necessity and functionality.

Competences of formation on critical judgement

- The player reflects on the ethical perspectives of the residents' needs in terms of autonomy and their demand for security.
- The player reflects on his role in terms of transmission and mediation of technical equipment.

16. Plot “Gabriele Hansen’s and Gerald Wiedenstädt’s tracking devices”**Competence of dealing with structured knowledge of standards**

- The player describes the principles of using technical innovations in providing care for people with dementia.
- The player describes possibilities of using technical innovations.
- The player names various tracking devices.
- The player explains the MEESTAR model.

Competence of hermeneutic understanding of individual cases

- The player weighs up the risks and chances of the use of tracking devices with Mrs. Hansen and Mr. Wiedenstädt and is able to defend these arguments.
- The player perceives the change in work processes through the use of technical innovations.

Competences of formation on critical judgement

- The player reflects on the ethical perspectives of the residents' needs in terms of autonomy and the demand for security.
- The player evaluates Gabriele Hansen's and Gerald Wiedenstädt's use of tracking systems based on the MEESTAR model.

17. Plot “Alfred Schneider’s and Gerald Wiedenstädt’s dispute”**Competence of dealing with structured knowledge of standards**

- The player perceives crisis situations as crisis and uses communication strategies to calm the minds and settle the dispute.
- The player develops strategies for dealing with challenging behavior.

Competence of hermeneutic understanding of individual cases

- The player handles the steps of validation according to the situation and thus prevents negative and emotional emergencies of people with dementia.

- The player perceives deviant behavior and experience as an expression of mental illness and disorders and obtains an understanding approach to Alfred Schneider and Gerald Wiedenstädt.
- The player describes and analyses his emotional reactions to deviant and challenging behavior and takes opportunities to unburden himself/herself.

Competences of formation on critical judgement

- The player reflects on his/her own actions in relation to the dispute with a college.

18. Plot “Roswitha Meierhans’ challenging behavior”

Competence of dealing with structured knowledge of standards

- The player recognizes the signs of misunderstanding situations in people with dementia
- The player explains the concept of Validation.
- The player develops strategies in validating interaction with residents
- The player deals with the tendency to run away as a symptom of people with dementia and develops strategies to respond to this behavior
- The player names legal aspects in connection with challenging behavior and behavioral disorders.

Competence of hermeneutic understanding of individual cases

- The player perceives Roswitha Meierhans’ feelings (e.g. aggression) and acts accordingly in a professional manner.

Competences of formation on critical judgement

- The player reflects on the claim to protect the resident vs. to protect the resident's self-determination.

