Developer of Digital Health and Welfare Services

The "DeDiWe" Curriculum after evaluation 29092017

Contents

1. Introduction

Information and Communication Technologies (ICT) applied to health and healthcare systems can increase their efficiency, improve quality of life and unlock innovation in health markets." This is the introduction to the eHealth Action Plan 2012-2020 - Innovative healthcare for the 21st century published by the European Commission. Therefore, also the Central Baltic region needs health and social care professionals to be proficient in eHealth, so that these professionals can fully utilize technology's potential to serve citizens and to develop new eHealth services.

This European plan aim to improve healthcare with a patient-centered approach and reduce costs by developing the use of digital tools and services for health-related matters. This means that professionals need new ways and tools to work as a new view on the patient. There needs to be changes both in working-life and in education. Offering eHealth and eWelfare services need competences, skills and a multiprofessional approach utilizing the expertise from health care and welfare, It, service design and communication. The DeDiWe curriculum aims at answering to these educational needs.

The new curriculum, "The Developer of Digital Health and Welfare Services" is created for VETs and UASs to eqf level 5 and 6 in a Central Baltic funded project. The content of the new curriculum is based on the latest knowledge of the needs of a digital society. In the study unit, future professionals (IT, social, economic and health care) are developing their competence to match the needs of digital healthcare.

The learning strategies build on blended learning, which mean combining face-to-face instruction with technology-mediated instruction (Graham 2006). The learning environment is built on the web based platform, a platform which with its´ interoperability bring together digital content, software applications, services, and hardware to provide school systems with a single solution (It´s learning, http://www.itslearning.eu/services). The learning is supported by face-to-face instruction and recorded lectures, AC-lectures and instructional material placed on the platform. The studies take place mostly at the e-learning platform, combined with cross-border co-creation and cooperation. The partners in Estonia, Latvia and Finland arrange a study unit piloting the curriculum. Students' eHealth related competence is measured at the beginning and after taking part of the studies with the new curriculum.

2. Learning by Developing, the framework for Developer of Digital Health and Welfare Service

LbD emphasizes acting together in projects, which are connected to real–life situations. The resulting outcomes are individual learning, community learning and produced innovations. Learning is seen as a tool for enabling the achievements of new competences needed in working life. Students learn by participating in authentic projects that require the integration of different types of knowledge, as well as different compo. The Learning by Developing pedagogic model (LbD) is developed in Laurea University of Applied Sciences (Laurea UAS). The LbD model combines research, development and innovation work, regional development and an educational perspective. The goal is to bring about real changes in the world and new habits of action (Taatila & Raij 2012). Combining theoretical and practical knowledge (Nonaka & Takeuchi 1995) in the University of Applied Science´s means that we have knowledge in practice, of practice and for practice, and are generating new innovations. In the LbD model, all these knowledge types are used. (Raij 2007, 2013.)

nents of learning in a professional context. (Taatila and Raij 2012.) LbD provides students and lecturers with genuine encounters with the changing requirements of working life and a collaboration model for functioning as innovative partners. Students learn to recognize areas of development, create new solutions, products and action models, and develop their activities, while taking into account the changing requirements of the employment sector. (Raij & Niinistö-Sivuranta 2012).

The holistic competence model was meant to direct building learning environments, where all the types of knowledge are to be found for enhancing the development of professional ways of action, which are seen as an integration of the identified components. (Raij 2014.)

Based on (Raij 2000), studies a holistic model of professional competence was identified as an integration of knowing, understanding, and acting and situation management. In terms of the various types of knowledge, the model is seen as an integrated whole that combines 1) knowledge written in theories and models, 2) knowledge embedded in skills and abilities, 3) moral knowledge and 4) experiential knowledge (gathered by acting and experiencing).
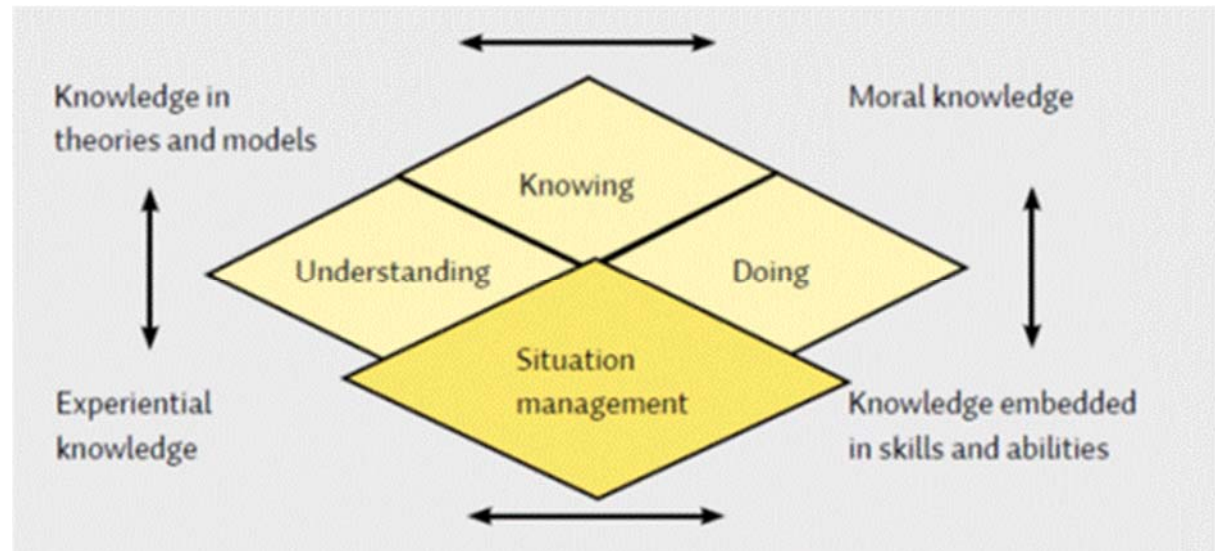
Picture 1. The holistic model of professional competences (Raij ed 2014)

The LbD model inspires and encourages as well as binds everyone as a learner and obligates every member of the University of Applied Science's staff, students and partners to work together through joint efforts, to gain new competences and participate in developing the region that is in a continuous flux of change (Raij & Niinistö-Sivuranta 2012).

LbD has changed the concept of teaching. Lecturers have an important role in enabling cooperation and equal partnerships that are integral to the LbD. Lecturers have a key expert role as tutors, project partners, and builders of networks, organizers of activities, planners, implementers and evaluators. Teaching also includes a communal aspect – the sharing of competence and experiences. Teaching has exchanges from distributing information to collaboration, workplace renewal and responsible involvement and participation. Workplace oriented R&D projects opens up new perspectives where one's expertise can be utilized, but also offering the opportunity for continuous learning. (Raij & Niinistö-Sivuranta 2012).

The teacher has different roles in LbD like a coach, a counsellor and a facilitator. Being like a coach, the teacher has to know the goals of the project and how to pursue the goals. Being like a counsellor, she has to look after for the roles of the students and the stakeholders by evaluating and reflecting. Being like a facilitator, she has to know the curriculum and the future targets of the project so that she can facilitate the long term targets and get the actors in the region involved. She has to keep contact with the stakeholders and students and motivate them to develop and implement the rules of the house in accordance with the best practices defined on the national level. At the same time she has to show new evidence based perspectives for the development work. (Ora-Hyytiäinen, Ahonen & Takaluoma 2010.) These studies are led by multi professional groups or teams.

The three main areas and concepts on which the study units are built in the curriculum are; the patient, client and customer orientation, digital health and welfare and service design.

3. Generic competences

The content of the DeDiWe studies curriculum is based on measured competence and the latest multi-professional knowledge about the needs of the digital society. (eHealth Action Plan 2012, STM 2014, Finnish Nursing Association 2016.) In the curriculum, future professionals (in IT, economics, social- and health care) are developing their current competencies to match the needs of digital health care and welfare as well as cultural differences in the Central Baltic region.

In this curriculum competences have been defined in accordance with the recommendation framework of EQF and from the perspective of the work required by the profession and society; i.e. individual's ability to take advantage of their knowledge, different skills, and a combination of qualifications. European higher education structure emphasizes a holistic view of competence, which is defined as knowledge, skills and competence. Competency means the personal qualifications of the person, what he/she needs for a good service product. The base of definition lies on knowledge, skills and qualifications, which can be seen as a result of learning (learning outcome). Views emphasize understanding, values, knowledge and its application. (EQF 2008, Mitchell 2009; Winterton 2009). Table 1. shows the general descriptions of level 5 and 6. (Recommendation of the EU, 2008.) DeDiWe curriculum will be described both levels and the difference between two levels of competences and learning comes to students with different kind of assignments.

	Knowledge	Skills	Competences
Level 5	Comprehensive, specialized, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge	Comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems	Exercise management and supervision in contexts of work or study activities where there is unpredictable change; review and develop performance of self and others
Level 6	Advanced knowledge of a field of work or study, involving a critical understanding of theories and principles	Advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialized field of work or study	Manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts; take responsibility for managing professional development of individuals and groups

Table 1 Descriptors defining levels in the European Qualifications Framework (EQF) https://ec.europa.eu/ploteus/en/content/descriptors-page

The students build up their general competences in learning environments solving problems, using critical creative thinking, multicultural awareness. Working together the students achieve competence that enables them to manage a variety of change managements skills, project management, guidance skills, lifelong learning in working life. The student need self-directedness, initiative, interpersonal effectiveness and entrepreneurship to study in the DeDiWe curriculum. The education will provide these general competences in research-oriented development and innovation based on Evidence Based Practice (EBP) from the perspective to product digital and welfare service.

4. Curriculum structure

The Developer of Digital Health and Welfare Services studies (30 credits) are combined from three study units (15cr) and with possibility to add the thesis process. It starts with the unit where the main content is the citizen as customer in digital health and welfare services and how professionals are communicating in a digital environment. Then comes the study unit about digital health and welfare environment's with ethics and regulation in healthcare. At last comes the service design study unit, that will increase participant's competences about customer oriented user centered service design and co-creation process.

Study Unit 1. The citizens as customers of digital health and welfare services

This study unit (5 cr) deals with the citizens as active and participating customers of digital health and welfare services and creation of competence in guiding and communicating usage of digital service alternatives.

The aim in the study unit is to
- Recognize and use e-Health and welfare services as they are today and recognize trends in future.
- Discuss and describe what "citizen as customer of health and welfare services" means.
- Empower customers to participate in their own health and welfare service in digital area.
- Identify the need for professional-level communication in digital environments.
- Guide the citizens in using digital eHealth and eWelfare service.

The content of the study unit is:
- Holistic approach to human being.
- Patient/client as customer in digital health and welfare services.
- Methods, ways and tools of virtual communication. Barriers of interpersonal virtual communications. Culturally sensitive communication.
- Professional communication in digital arena (ethics, business etiquette, client service).
- Methods and tools of guidance for the digital health and welfare services and health promotion. Evaluation of the existing practice of e-health guidance.
- Some ways of guidance for different groups (social status, age groups etc). Choosing appropriate services to different clients with special needs (age, social groups, chronic conditions etc

Competence area	Fundamental of human and health	Communication	Guidance
Learning outcomes EQF5 The student is able to	know fundamentals of human and health related to citizen as customer in digital health and welfare services	know the aspects of effective virtual communication	know some methods and ways of guidance for the digital health and welfare services
Learning outcomes EQF6 The student is able to	understand and explain fundamentals of human and health related to citizen as customer in digital health and welfare services	understand and explain–the aspects of effective virtual communication	know and implement some methods and ways of guidance for the digital health and welfare services

Table 2 Learning outcomes in study unit 1

Study Unit 2. The digital environment in health and welfare services and its ethics and regulations

This study unit (5 cr) deals with health informatics and the general process of digitalization in health and welfare and the laws and regulations surrounding it.

The aim in the study unit is to;
- understand basic health and social care informatics
- know and/or understand basic methods of technical informatics/computer science according to their own profession
- understand and apply principles of evidence-based practice and know evidence based clinical pathways
- understand and apply legal knowledge of confidentiality, IT-security and patient data privacy and protection

The content of the study unit is:
- Partnership countries health and welfare environment, health and welfare informatics environment ex. Kanta services, Estonian X-Road
- How to store data, share data, refine data, different databases
- Ethics, laws and regulations and customer safety, data privacy and security
- Structural data, health and social classifications, the basic elements for support of decision making systems

Competence areas	The Health and Welfare services in general and in eServices	The digital environment as technical environment/ The digitalization process	Safety culture in the digital world	The informatics environment / Intelligent services
Learning outcomes EQF 5 The student is able to	know the partnership countries health and welfare environment and especially from the digitalization perspective and know principles of evidence-based practice and evidence based clinical pathways in eHealth and eWelfare	enable digitalization through the understanding of underlying technical aspects. Know the digital environment and ways to navigate in it. Find ways to conceptualize and focus on eHealth and eWelfare services in relation to the specific needs of the customer	know ethical theories, safe procedures, principles and laws affecting eHealth and eWelfare as the privacy of the customer. Have skills to practice ethically high quality customer work taking responsibility for the safety and integrity of the client	know basic elements of structural data, intelligent services and decision support systems. Know the system and apply output in decision making and in facing the challenges the digitalization might bring
Learning outcomes EQF 6 The student is able to	understand and explain the partnership countries health and welfare environment and especially from the digitalization perspective and know principles of evidence-based practice and evidence based clinical pathways in eHealth and eWelfare	enable digitalization through the understanding of underlying technical aspects. Understand the digital environment and ways to navigate in it. Find ways to conceptualize and focus on eHealth and eWelfare services in relation to the specific needs of the customer	understand ethical theories, safe procedures principles and laws affecting eHealth and eWelfare as the privacy of the customer. Have skills to practice ethically high quality customer work taking responsibility for the safety and integrity of the client	know basic elements of structural data, intelligent services and decision support systems. Know the system and can apply output in decision making and in facing the challenges the digitalization might bring

Table 3 Learning outcomes for study unit 2

Literature

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https://hbr.org/2014/03/who-can-you-trust

Additional reading;
The EU legal framework on e-health
http://www.euro.who.int/__data/assets/pdf_file/0008/138185/E94886_ch13.pdf?ua=1

E-health; ethical and data privacy challenges in the EU
https://www.cov.com/~/media/files/corporate/publications/2011/04/e-health---ethical-and-data-privacy-challenges-in-the-eu.pdf

Overview of the national laws on electronic health records in the EU Member States and their interaction with the provision of cross-border eHealth services Final report and recommendations
http://ec.europa.eu/health/ehealth/docs/laws_report_recommendations_en.pdf

Ashly D. Black1 , Josip Car1 , Claudia Pagliari2 , Chantelle Anandan2 , Kathrin Cresswell2 , Tomislav Bokun1 , Brian McKinstry2 , Rob Procter3 , Azeem Majeed4 , Aziz Sheikh2 . 2011.

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Study Unit 3. Digital service development and information management in health and welfare services

This study unit (5 cr) deals with the development of digital services and the creation of competence in service design process. In the group-works there are lots of variations of service - service design, digital service, healthcare service. The aim of this study unit is to give future professionals skills in developing improved e-Health services. The point is give orientation and create interest to this topics.

The aim in the study unit is to;

- understand user centered service design and multi professional development process to digital services
- be able to applied future orientation and solutions centric working habits
- to understand different kind of data sources and structures and future possibilities to utilize data analytics for citizens' health promotion

The content of study unit
- service design process
- user centered approach
- future orientation and creative working habits
- project management and online collaboration
- databases and health information system usage and security
- Image analysis (Xray, brainscans, etc.) & remote diagnostics
- Internet of Things/sensor technology/wearables growing, so much more data available from individuals (MyHealth-data).
- Analytics and visualization

Competence area	Digital service	Service design methodology	Technology design and build -process	Implementation and evaluation

	in health & wellbeing context			
Learning outcomes EQF 5 The student is able to	know the meaning of the theoretical knowledge and principles of digital service in health and wellbeing context	know and demonstrate skills to innovative service design methodology	know principles and methods of digital service development in technology design process	know elements of successful implementation of new digital service into users and organisations.
Learning outcomes EQF 6 The student is able to	understand and explain the meaning of the theoretical knowledge and principles of digital service in health and wellbeing context.	identify and create simple solutions skills to innovative service design methodology.	apply into practice some principles and methods of digital service development in technology design process.	plan and execute simple implementation project.

Table 4. Learning outcomes in the study unit of digital service development and information management in health and welfare services

Literature

Polaine A., Løvlie L.& Reason B. Service Design. From insight to implementation. Summary by Kim Hartman. http://www.kimhartman.se/wp-content/uploads/2013/10/Service-Design-from-insight-to-implementation-summary.pdf

Herrmann A., Huber F. & Braunstein C. Market-driven product and service design: Bridging the gap between customer needs, quality management, and customer satisfaction. International Journal of Production Economics. Volume 66, Issue 1, 5 June 2000, Pages 77–96. http://www.sciencedirect.com/science/article/pii/S0925527399001140

Aurich J.C., Fuchs C & DeVries M.F. An Approach to Life Cycle Oriented Technical Service Design. CIRP Annals - Manufacturing Technology. Volume 53, Issue 1, 2004, Pages 151–154. http://www.sciencedirect.com/science/article/pii/S0007850607606660

Business model canvas, template: http://unicornomy.com/wp-content/uploads/2016/03/business-model-canvas.jpg

Download free e-book (72 pages) from here:
http://businessmodelgeneration.com/book?_ga=1.107046533.686026417.1461067654
Goodwin, K. (2009). Designing for the Digital Age : how to create human-centered products and service - Goodwin, Kim, Indianapolis : Wiley, 2009.
Links news to the service design method

5. Thesis as part of the DeDiWe studies

In the DeDiWe studies student's curricula are on level 5 and 6 in EQF. The thesis are on level 5 between 12-15 credits, on level 6 between 7- 30 credits. In thesis process every school have their own way of working with the thesis process.

The thesis groups are multi professional consisting of students from all different fields. The length of the process should be 6-12 months. The process starts with an idea seminar that takes place at a workplace that is a partner in the project. In this way the working life has a chance to affect the students plan and they will have a possibilities to ask questions from each other.

Then a study plan seminar will take place and it is done multi nationally over AC/Adobe Connect or Skype. Students will write their plans in their own language, but they will oppose each other orally and students from different schools oppose each other. The working life is invited to participate in these seminars, so they will have a possibility to comment and ask questions to the students. If the connections do not work, each school will have their own seminars traditionally and individually.

The publication seminars are done traditionally, but the students involved in this project will also present their thesis to the workplace with whom they have collaborated. In Finland, Arcada and Laurea could have common seminars.

Group supervision takes place approximately 6 times during the process and one session consists of 1-2 topics. Main topics for supervision are content, literature retrieval, collaboration skills with working life (to prepare the students), methodology, especially regarding dissemination as a method, both for students and teachers. Two ward meetings will take place, the first one to map out the current situation and what is important for the ward/workplace. For the second meeting the students have done literature searches and will inform the workplace about the latest research about the topic that they have chosen. If needed, students can come 1-2 times for an individual supervision. In the beginning students can get support in the search for evidence based knowledge, but also further on. The working life is also invited to join this workshop. They are carried out with the support of the librarian and the teacher.

Planning				Implementation				
09/2016	09-10/2016	11/2016	12/2016	01/2017	02/2017	03/2017	04/2017	05/2017
Students workshops	1.Setting the framework, content Literature retrieval	Preliminary Thesis plan Seminar	1. Study plan together with all DeDiWe partners -Oral opponency online	2.analyze the data and 3.describe the present situation	3. Literature retrieval (with working group) for new development target	Building a New model and comparison	3. Evaluation of new model	Publication seminar/18.5 13.30-16.00 Regional project seminar: presentation of results
Meeting: Students and Working group				1. Interview/ data collection -> present situation		1.Building a New model and 2.comparison and 3.preparing presentation to staff		Regional project seminar: presentation of results
Meetings of working community		1.The working group informs the working community on project progress and timetables, approx. 20 min. 2.Preliminary Thesis plan in working community (getting ideas and wishes to the process from working community)			1.Evaluate the description of present situation and 2. selection of development target Approx. 1 h.	Building a New model and comparison, 4.Planning the implementation of new model 5.Implementation of new model	2.Evaluation of development process	
Lecturers Work-shops	2.Methods: dissemination, interview,data collection …………… collaboration skills		2. Study permission				1.Testing the new model	

6. Assessment

The assessment will be done by evaluating individual and group assignments in each study module. Every country is using their own assessment process, comparing to EQF 5 or 6.

The language in the assignments is English. The thesis are written in the native languages but have abstracts in English.

| ECTS system	Definition	Numerical grading	or	or
A++	WITH DISTINCTION Knowledge substantially higher than estimated normal level	5	3	10
A+	EXCELLENT Knowledge higher than estimated normal level	5	3	9
A	VERY GOOD Knowledge corresponds to the highest expected level	4	3	8
B	GOOD Knowledge of the subject deep and with understanding, progressing within the expected limits, but minor mistakes.	4	2	7
C	ALMOST GOOD Knowledge generally achieved within the necessary limits but either: more reproducing the knowledge than actively using it, or making more substantial mistakes.	3	2	6
D	SATISFACTORY Knowledge progressing within the limits of t individual abilities, in general not behind the appropriate group, but make substantial mistakes and are more fixing the facts then analyzing them.	2	1	5
E	ALMOST SATISFACTORY / SUFFICIENT Knowledge fulfills the minimum criteria but not more, severe mistakes and are practically just reproducing most of the necessary material.	1	1	4
F	UNSATISFACTORY/ INSUFFICIENT Knowledge below the expected for the appropriate group	0	0	3-1

Table 5. The assessment in different countries.

7. Individual study plan

Students will make their individual study plan according to the students' basic study programme in every school and every curriculum using the same structure. The aim of the study plan is to describe professional background of the student and his/her interest of the developing digital health and welfare services. Also the interest to make thesis research based development project during DeDiWe studies is described.

8. Timetable for Curriculum Pilot 2016–2017

The curriculum Developer of Digital Health and Welfare services pilot´s timetable is described here. During the studies there will be seminars as webinars for the students and open webinars also for associated partners' personnel. The pilot will start 22.9 13-16 and end with the open webinar disseminating the project results 18.5. 13.30-16.

Study unit one and two have seminars (4) 29.9, 13.10 10.11. 1.12 (time 13-16) and Open Webinars (2) 27.10.16 and 19.1.17. (14-16). Study unit three has seminars 9.2 and 2.3.17 an Open Webinar 30.3.17.
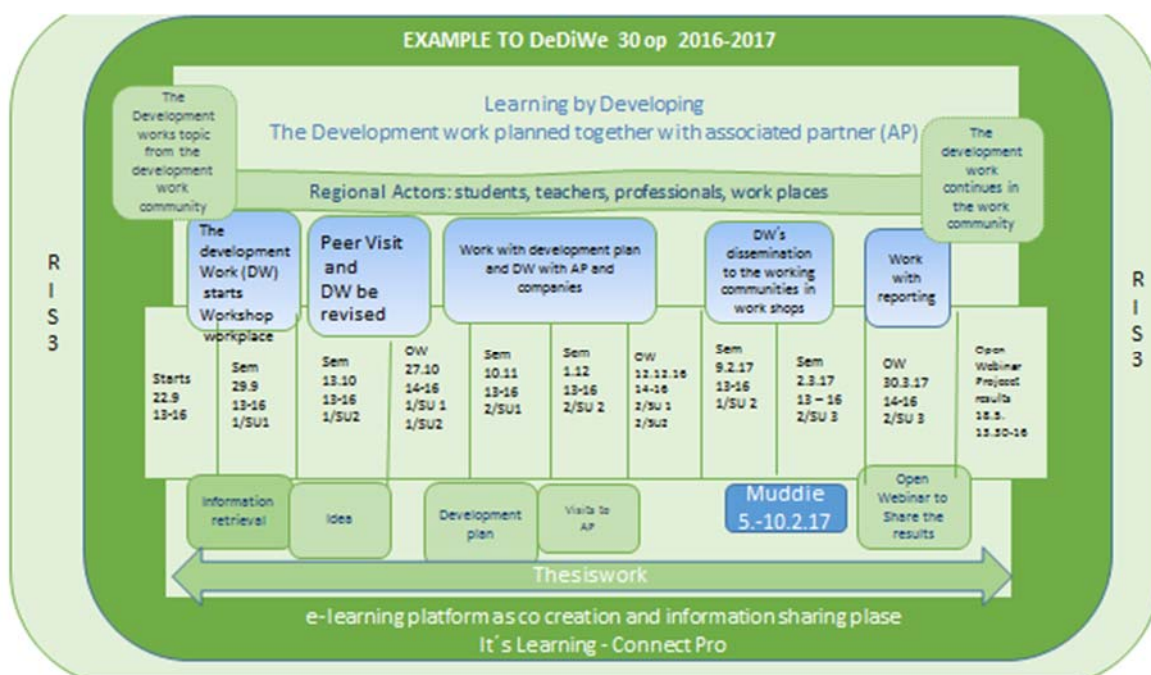
Picture 2. The curriculum Developer of Digital Health and Welfare Service pilot structure

9. Literature

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ARCADA   LAUREA | Yhdessä | enemmän   RED CROSS MEDICAL COLLEGE   TARTU TERVISHOIU KÕRGKOOL   TARTU HEALTH CARE COLLEGE

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