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Erasmus+ TECH2MATCH

Content for Mobile Apps unit

Prepared by the TECH2MATCH consortium.

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1 Introduction

This document presents the Teaching Guide for the Mobile Application Unit of the TECH2MATCH Erasmus+ project. It serves as a comprehensive pedagogical resource for lecturers involved in the delivery of the Mobile Application Unit Introduction within the broader TECH2MATCH framework. The guide provides clear learning outcomes, structured activities, and rationales grounded in Reflective Practice-based Learning (RPL), ensuring a coherent and evidence-informed teaching approach.

The content is organised into sequential units covering aspects of applying technology to patients with pain. Each unit includes both basic and advanced learning tasks, designed to promote progressive, self-directed, and interdisciplinary learning among students in nursing, midwifery, physiotherapy, occupational therapy, and related health sciences.

This guide aims to support educators in aligning teaching methods with the course's reflective and experiential learning philosophy. By integrating theory with clinical and technological perspectives, it provides the structure and tools necessary to foster analytical thinking, empathy, and professional competence in the understanding and management of pain.

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MOBILE Pain Support APPS

How mobile apps help with pain

Mobile Apps provide pain patients with monitoring, management, relief, and communication possibilities in the **palm of their hand**.

Try it with your patients

Visualization of the pain experience

Planning and supporting pain management

Communicating the pain experience

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Introduction to the Mobile Application unit – in the MOOC.

Welcome video describing objectives, learning outcomes formulated in a general manner, and information about formalities related to the activity schedule, including any deadlines and access to course material.

Level: Advanced
Activity description: Starting activity
Activity Rationale: Students are asked to identify a mobile application of their choice and use it to monitor one or more aspects of their lives. This activity should have a duration of at least 2-3 days, and the students' experiences with using the mobile application of their choice will be part of an activity in Unit 2, Section 2.2, specifically 2.2.3.
Resource: Not available – Further info in Unit 2 /Section 2.2 / 2.2.3

2 Content

Unit 1: Introduction to the technology

1.1. Terminology – Mobile applications

Basic learning outcome: Students understand mobile applications from a clinical perspective.
Basic learning outcome: Students remember specific facts related to the clinical use of mobile applications.
Advanced learning outcome: Students can analyze and identify relationships between needs and clinical use of mobile applications.

Tasks

1.1.1 See provided video material

Level: Basic
Activity description: The students watch the provided video material.
Activity rationale: The students watch a short video that presents what a mobile application is. The film includes both spoken explanations and visualizations to help students quickly grasp what a mobile application is. The video has a duration of approximately 5 minutes.
In terms of learning level, this learning activity, according to Bloom's Taxonomy, falls at the understanding level. The aim is to base our approach on learning principles: No. 4 – activities are based on a good example. The idea here is that students sit separately and watch the movie to gain a common starting point of knowledge about what an application is, which will be further developed when working with mobile applications. But you, as the teacher, can also choose to have the students watch the video together in groups (possibly online) and discuss the content of the movie. This way, one can reflect on and discuss knowledge, gaining a common understanding. Some students learn when they discuss academic content with others - there is flexibility here. With attention to the fact that students have different learning preferences. Some require text, others audio and visualizations, and some need to discuss and talk with others to acquire learning.

Resource: MOOC

1.1.2 Read provided literature

Level: Basic

Activity description: Read the provided literature. We expect it will take the student 35 minutes to read the literature.

Activity rationale: Students are reading literature that serves as an exemplary example for understanding the basic elements of the technology: mobile application. The purpose of the written material is to elaborate and provide explanations for some aspects that the film has visualized. In terms of the learning level, this learning activity, according to Bloom's Taxonomy, would still be at an understanding level. The aim is also to base our approach on Learning Principle No. 4, which is based on a good example. This learning activity aims to support and unfold the video so that students can gain a fundamental understanding of mobile apps for the rest of the instruction. The teacher must pay attention to whether the literature is suitable for the student's learning level and their technological experiences. Here, it is expected that the students will sit by themselves to read the literature and have time to correlate the knowledge from the video and the content of the literature. When the instructor finds relevant literature, it is important that the level of the literature can be applied to the area of interest of health professionals. It is health professionals who need to know about mobile applications, not engineers. When the instructor evaluates this course, it is essential to assess whether the literature is perceived as relevant by the students.

Resource: MOOC

1.1.3 See recorded lecture

Level: Basic

Activity description: See the recorded lecture.

Activity rationale: We expect it will take the student 10 minutes to listen to the oral presentation of the most common knowledge about mobile applications. We are still working here with basic principle 4, where the goal is to provide students with good examples of mobile apps. Here, the instructor will highlight the most important elements in the literature that the students have read and provide concrete and relevant examples of these. The instructor will try to make the reading literature relevant to the students' practice. Here, the instructor will also pose some reflective questions to the students, so they are led/guided to think about the new knowledge they gain through the reading of the literature

and the instructor's presentation. Basic principle no. 4 is based on the idea that a reflection process (learning process) requires the student to have something to reflect upon. Therefore, there is a need for exemplary examples. Such a principle will develop knowledge in the student that is relatively concrete and easy to understand and acquire. At the same time, it promotes a general understanding and has an overarching value that can be immediately applied to similar situations. The purpose here is precisely for the student to activate thinking and action based on a more or less constructed segment of the health sector. The instructor can then pose reflection questions that the students must discuss and work with.

Resource: MOOC

1.1.4 Succeed in quiz

Level: Basic

Activity description: Succeed in a quiz.

Activity rationale: This concludes the basic teaching activities with a quiz, enabling students to assess their understanding of the presented content. A quiz can make it clear to the student where there is a need to read more or read something again. The learning principle remains a good example, as the quiz serves as a summary of the teaching material so far. It is important here that the quiz focuses on what the student needs to learn in terms of terminology related to mobile apps. The quiz should be designed so that the student, for example, is presented with three different statements where one is correct. It could also involve visualizations where the student must choose the correct one. Here, the quiz should be able to function without an instructor grading the responses afterward. Ultimately, the student is shown the correct answers and receives feedback on where to find information about the questions they answered incorrectly.

Resource: MOOC (Quiz)

Question number	Question	Yes	No
1	Hardware refers to the actual mobile device.	X	

2	An app is a software program which can be downloaded to a mobile device.	X	
3	Is their consensus on the terminology related to the use of mobile applications in healthcare?		X
4	Can external hardware, such as a sensor, sometimes be necessary to use when applying mobile applications in healthcare?	X	
5	Can Mobile Applications be used to monitor patients?	X	
6	Can Mobile Applications be used as a goal setting device?	X	
7	Mobile applications can only support one-way communication		X
8	No evidence exist on the use of mobile applications in		X

	the management of pain.		
9	Evidence show that pain management can benefit from the use of mobile applications	X	
10	Only acute pain have been scientifically proven to benefit from the use of mobile applications.		X
11	Is usability an issue, when considering mobile applications in the management of pain?	X	

1.1.5 Analyze patients' need

Level: Advanced

Activity description: Analyze material describing the needs of the patient or HCP.

Activity rationale: This activity will take about 45 minutes. Students can analyze and identify relationships between needs and the clinical use of mobile applications. In this process, students should be able to analyze and assess a specific citizen's/patient's needs to determine if a particular mobile application can be utilized by this individual. Students are given a brief case description of a citizen/patient, without any specific diagnosis or pain described. However, the case will detail the citizen's interests and needs, possibly including age and previous experience with mobile applications. The students are then presented with, for example, three applications, and in groups, they must discuss and evaluate

whether their case person could benefit from one of these applications. The students must argue for their choice of application.

This activity can be completed both online and in person. As an introduction, all students sit together in the classroom where the instructor explains what the activity entails. Subsequently, students have the opportunity to sit in groups to discuss and find a common solution. The instructor circulates among the groups to guide them if needed. Here, the instructor can also pose questions to the groups about their solutions to initiate dialogue and reflection among the students. The aim here is precisely for students and the instructor to collaborate on the learning process. Learning occurs socially, and it is through dialogue that students can analyze and understand a person's needs, matching them with technology at a general level. Some students may have experience with the various applications under evaluation, and their personal experiences can provide new insights within the group.

In terms of the basic principles for RPL, this activity enables students to engage in dialogue not only among themselves but also with the instructor, discussing and forming arguments in support of their chosen application. Thus, the teaching is based on RPL basic principles 5 and 6. Furthermore, in terms of Bloom's taxonomy, the learning achieved would be at the analytical level.

Resource: Case person video and list with mobile applications

1.1.6 Discuss analysis

Level: Advanced

Activity description: Discuss the analysis of material describing the needs of the patient or HCP. This activity will take about 20 minutes.

Activity rationale: The students have now worked on analyzing the case person and descriptions of about three different applications - (the students may have also downloaded the applications). Now, all groups meet in the classroom to present their choices and reasoning. Here, they will also hear the arguments of other students and what they have assessed as the case person's needs. Approximately 20 minutes are set aside for this. We may not necessarily hear all groups' choices, but there must be a form of feedback that focuses on the arguments for the choices - different arguments can be correct in this context. In addition to the previously mentioned basic principles (5 and 6), hearing other

groups' arguments for their choices can also serve as an appropriate disruption in the students' learning process (basic principle no. 2). Other understandings and experiences might disrupt the students, thereby opening up new understandings of mobile applications.
Resource: Here, the teaching takes place in the classroom or online, where the students can contribute materials themselves. It's possible that they have prepared a presentation in PowerPoint or a similar format. Therefore, there will be no requirement for materials prepared by the instructor.

1.1.7 Analyze clinical use of mobile applications

Level: Advanced
Activity description: Analyze the clinical use of concrete mobile applications and describe the analysis in a template.
Activity rationale: Students work in groups to evaluate and analyze a specific mobile application using a prepared analysis template. There are various concrete parameters that students must assess to determine whether the given application contains/complies with. This may involve both ticking off boxes and providing brief explanations in the template. The template for these analysis schemes should be made available on an available learning platform. The analysis parameters in this template will be overarching terminologies - general understandings of the app's content. The group analysis work is estimated to take approximately 45 minutes in total, including an assessment of one application. The purpose of this analysis exercise is to teach the student to cast an overarching analytical eye on any application, enabling them to discern its purpose.
In relation to Bloom's taxonomy, students will work analytically, and according to the basic principles of RPL (No. 3), they will explore concrete mobile applications.
Resource: Mobile Application Rating Scale (MARS) and links to mobile applications

1.2. State-of-the-Art Technology – Mobile applications

Basic learning outcome: Students understand the technical infrastructure of mobile applications.

Basic learning outcome: Students understand usability issues related to the handling of patient data.
Advanced learning outcome: Students can evaluate usability issues related to handling patient data on a mobile application.
Advanced learning outcome: Students can analyze and evaluate potential adverse/side effects of content related to a mobile application.

1.2.1 See video

Level: Basic
Activity description: See video.
Activity rationale: The students begin by watching a film that provides a general understanding of the technical infrastructure of mobile applications. The video is relatively short, approximately 5 minutes in length; therefore, only the most crucial elements are presented to the students. This video aims to provide students with a general understanding, enabling them to subsequently grasp this concept and acquire more knowledge, thereby fostering a deeper comprehension based on the film. The film offers a fundamental baseline understanding for students who lack prior knowledge about the technical infrastructure related to applications. If the student already possesses this knowledge, the video will simply serve as a review. Initially, it is intended that the students watch this film individually, and it will merely provide them with some knowledge. The video includes both explanations and descriptions of the technical infrastructure, as well as visualizations, such as drawings and video clips, among other elements. From a learning perspective, this appeals to both auditory and visual senses. In terms of RPL, this learning activity aims to provide an example of good practice.
Resource: MOOC

1.2.2 Succeed in puzzle

Level: Basic
Activity description: Technical infrastructure
Activity rationale: In this activity, students are required to assemble knowledge about the technical infrastructure in the correct order. This exercise may resemble a puzzle - the activity involves visualization and arranging text in the correct sequence. If necessary,

students can review the previous learning activity, the video. This learning activity builds upon previous ones, the difference being that it requires recalling information (such as the knowledge acquired from the video).

Resource: MOOC

1.2.3 Succeed in quiz

Level: Basic

Activity description: Succeed in the quiz through information search.

Activity rationale: The students are now required to answer a quiz that expands their knowledge of the technical infrastructure of mobile applications. This builds upon the knowledge they have acquired in the two previous learning activities. The students will need to search the internet to answer this quiz, hence the duration for completing it will be approximately one hour. Educationally, the aim here is for the students to explore new knowledge about mobile applications. Therefore, this learning activity is also targeted towards an advanced learning level. The starting point is that students work individually, but it can also be effective in groups. The quiz questions are formulated in such a general manner that the answers provided by the students can be assessed as either accepted or rejected. This is a quiz that does not require evaluation by a teacher, as the system automatically assesses the answers. An answer must be deemed accepted for the student to proceed to the next question.

Resource: MOOC.

Question number	Question	Right	Wrong
1	GDPR - is short for General Data People Regulations		x
2	GDPR refer to the handling of personal data	x	

3	Mobile applications are not subject to data protection regulations		x
4	It is the patients own responsibility to ensure that the mobile app provided by healthcare persons conform with GDPR		x
5	Ethics consent and GDPR are the same		x
6	In a GDPR context personal and health data are the same thing		x
7	User content should be collected before data is processed in a healthcare app	x	
8	Data Protection Impact Assesment is not mandatory in mobile applications used in healthcare		x
9	The privacy polices of healthcare apps are changed	x	

	when the data processing practices are altered		
10	Under GDPR users of healthcare apps have the right to both access, rectify and erase their data	x	

1.2.4 Evaluate mobile applications

Level: Advanced

Activity description: Evaluate a specific mobile application.

Activity rationale: Students will work in groups, either face-to-face or online, to evaluate the usability of a specific mobile application with a focus on patient/user data. They will assess a particular application that is described and has a web reference where students can read more about it. The students will be provided with some overarching questions that can frame this evaluation of the application. It is possible to seek help and dialogue with a lecturer so that the groups can be guided in the right direction. The RPL principle, therefore, encompasses both learning through dialogue and learning through exploration. The learning level should also aim to be at a more advanced level. The purpose here is for students to learn how to evaluate a specific application regarding user data (45 minutes).

Resource: PDF with questions about patient data and links to mobile applications.

1.2.5 Evaluate mobile applications

Level: Advanced

Activity description: Evaluate a specific mobile application.

Activity rationale: Students will work in groups again, either online or face-to-face. They will be given a specific mobile application, and the group will assess potential side effects that may arise from using this particular application. This exercise will focus primarily on the application's content. The students should try to understand how the application affects user behaviour. This means they will start by evaluating and describing what the

application contributes, specifically its purpose. Then, they will assess what possible side effects could emerge from using this application. The focus is not on a specific user/patient group; it will be an application aimed more broadly, one that students themselves could choose to use, for example.
The students work in groups, so the intention is for the students to engage in dialogue with each other, providing new perspectives in the learning situation and ideally facilitating higher-level learning. An instructor is also present, allowing for dialogue with the instructor. (In terms of Reflective Practice Learning (RPL), the aim here is to support dialogue as a learning principle.) - It is assessed that it will take the group of students 45 minutes to evaluate a specific application since there should be room for dialogue.
Resource: PDF with guiding questions

1.2.6 Discuss evaluation

Level: Advanced
Activity description: Discuss the evaluation of a specific mobile application.
Activity rationale: The students are gathered (the entire class) either online or face to face, where they, in groups, are to present their analysis from activity 1.2.5 to the other groups. This means they need to have prepared their analysis, which can be done in various ways. The students themselves decide whether they want to create a poster from which they pitch their analysis, a PowerPoint presentation, or something entirely different. The purpose here is for the students to gain insights into each other's reflections and thoughts related to working with applications. In terms of RPL, the aim is to support the principle of students engaging in dialogue with each other and with the lecturer. Not all groups will have the opportunity to pitch their work, as this learning activity will take approximately 20 minutes. Here, the learning is at an advanced level as it involves presenting an analysis.
Resource: No resource necessary.

1.3 Supplementing technology – Mobile applications

Basic learning outcome: Students can remember the basic requirements of technological infrastructure supporting the use of mobile applications.

1.3.1 See video

Level: Basic

Activity description: See video

Activity rationale: Students watch a 5-minute video that summarizes the key elements of the basic requirements for technological infrastructure supporting the use of mobile applications. The students can watch this video as a compilation of previous learning activities independently. The purpose here is for students to recall the fundamental requirements of the technological infrastructure supporting the use of mobile applications. Educationally, this is basic knowledge that students are expected to remember subsequently. In terms of RPL, it would involve the principle of summarizing a good example of mobile apps.

Resource: MOOC

Unit 2: How to set up the technology

2.1: Setting up the technology.

Basic learning outcome: Students understand how to set up and apply a mobile application.

Advanced learning outcome: Students can analyze and evaluate preferences related to choices when setting up a mobile application.

Tasks

2.1.1 + 2.1.2 + 2.1.3 Prepare a mobile application for use

Level: Basic

Activity description: Setting up Mobile Applications – 3-part activity

Activity rationale: Part 1 - In this basic-level activity, students must download and set up a specific mobile application. The activity begins with a video assessed through the MOOC. The video features both audio and subtitles, and includes an introduction to four selected mobile applications. The students could subsequently be randomly assigned to one of the apps; if more appropriate, students could also choose which application they want to work with themselves. They must download and set up the mobile application for use and familiarize themselves with the app's functions. The activity is a 30-minute individual exercise. The idea behind this activity is to provide insight into how mobile applications work by having students work with and use an app themselves. Therefore, the activity is based on RPL principles 1 and 3, which are experience and exploration. Taxonomically, students must gain an understanding of the application's use.

Part 2: This basic-level activity builds on part 1 and begins with an introduction video, which is available in the MOOC. The activity is structured to provide students with appropriate disruptions and experiences, and to taxonomically guide them in understanding how to use mobile applications by having them go through all the steps of a setup phase. This activity is a 30-minute individual assignment.

Part 3: This basic-level activity builds on Parts 1 and 2 and is introduced through a video in the MOOC. The students should apply the step-by-step guide created in part 2 to a fellow student, a colleague, or a patient. This "exchange" of a guide emphasises the importance of feedback. The activity falls under the RPL principles of experience and dialogue, as it aims to provide hands-on experience with using mobile applications, personalizing them, and learning to guide others in the use of a specific application. For this, the students have 30 minutes.
Resource: MOOC

2.1.4 Evaluate step-by-step guide
Level: Advanced
Activity description: Critically evaluate the step-by-step guide using the provided questions

Activity rationale: In this advanced activity, students are required to evaluate the step-by-step guides they have developed in parts 1, 2, and 3. The activity is planned as a group activity, either online or face-to-face, where students evaluate a step-by-step guide prepared by a fellow student that they have just applied. Using a framework consisting of approximately 4 questions, the students must assess the use of the step-by-step guide. The questions in the framework are to be answered in writing. The purpose of evaluating the step-by-step guide from an external perspective is to help students critically reflect on working with multiple aspects of mobile applications. In relation to RPL principles, the use of a framework in the evaluation is considered a disturbance that helps students reflect on aspects not already clear to them, and the dialogue facilitates different perspectives. For this activity, the students have 30 minutes. The activity is structured taxonomically to engage the students in evaluation. This activity can be carried out either online or on campus.
Resource: Guiding questions

2.1.5 Personal adjustments

Level: Advanced
Activity description: Adjust mobile application to PwP
Activity rationale: This advanced activity begins with an introduction video featuring a case study. In the case study, the person discusses their own preferences. The case presented in the video must serve as a good example in relation to the RPL principles. Based on the information presented in the video by the case person, the students must analyze the need for personal adjustments to the mobile application and subsequently implement these adjustments into a specific application. The activity is designed as a group activity, with students working in the same groups as in activities 3 and 4. Students choose which app from activity 2.1.1 they want to work with. The timeframe is 30 minutes. Taxonomically, students are placed at an analytical level, learning to analyze personal needs in relation to mobile applications is the purpose of the activity. The activity can be conducted either online or on campus.
Resource: Case person video

2.2: Side effects and risks

Basic learning outcome: Students understand psychological side effects related to mobile applications.
Advanced learning outcome: Students can analyze and evaluate psychological determinants of mobile application use.

2.2.1 Read provided literature

Level: Basic
Activity description: Read the provided literature
Activity rationale: In this basic-level activity, students are required to independently read the provided literature concerning the psychological consequences of using mobile applications. The literature will be available as a PDF file in the MOOC. Thirty minutes are allocated for reading the material, with the purpose of providing students with background knowledge and an understanding of the possible unintended consequences of using mobile applications. Based on this background knowledge, students should be able to focus on selecting, using, and guiding the use of mobile applications effectively.
Resource: MOOC

2.2.2 Succeed in quiz

Level: Basic
Activity description: Quiz
Activity rationale: This basic-level activity builds on activity 1. Students are required to individually answer a multiple-choice quiz based on the literature they have read in activity 1. The quiz is available through the MOOC. The quiz is designed to test students' comprehension of the literature read in Activity 1, and its purpose is to help students focus on the important highlights of the physiological consequences of using mobile applications. The quiz is automatically assessed, and the score will be visible to the students.
Resource: MOOC (Quiz)

Quiz:

What should be taken into consideration when advising on the use of a mobile health intervention?

- Only the convenience of the intervention.
- Whether the intervention aligns with the user's preferences.
- Whether the content is appropriate for the user and any possible adverse effects.
- Whether the intervention is endorsed by the healthcare professionals.

According to the text you have read, what negative impact social media components of interventions have?

- They may improve mental health.
- They may increase anxiety about health.
- They have no effect on mental health.
- They may decrease anxiety about health.

What is one potential adverse effect mentioned regarding the use of digital interventions?

- Decreased consultation with healthcare professionals.
- Increased anxiety about health
- Improved access to face-to-face services.
- Prevention of unhealthy behaviors.

Which of the following is NOT mentioned as a concern regarding the use of digital and mobile health interventions?

- Encouraging excessive behavior.
- Increasing anxiety about health.
- Promoting healthy behaviors.
- Preventing vulnerable people from accessing face-to-face services.

What awareness should you have regarding commercial interventions:

- They encourage users to set realistic goals.
- They discourage continuous use once goals are achieved.
- They promote ongoing use even after goals are met.
- They prioritize user satisfaction over goal attainment.

What potential consequence did the committee address regarding constant notifications when using mobile applications?

- They may positively impact self-efficacy.

- They may negatively affect self-efficacy.
- They have no effect on behavior change.
- They are only beneficial for children.

What concerns did the committee have regarding the use of digital interventions exclusively for managing clinical conditions?

- They may lead to better health outcomes.
- They may replace face-to-face consultations entirely.
- They are universally effective for all conditions.
- They do not provide enough support for individuals.

2.2.3 Psychological determinants

Level: Advanced

Activity description: Follow-up on starting activity

Activity rationale: In this advanced activity, students are required to complete an online survey regarding the psychological factors that influence mobile application use. The survey should be made available through an LMS. The purpose of the survey is described in a short introduction. Students should base their responses on their experience of having monitored themselves using the specified application over the last x days. The survey must be completed individually, either online or in the classroom. It is assumed that the survey can be answered comprehensively within 15 minutes.

In terms of learning level, according to Bloom's Taxonomy, this learning activity will be at an analyzing and evaluating level. We aim to base our approach on learning principles: No. 1 – activities are based on experiences. The purpose of this activity is to allow each student to reflect on their own experiences with the use of mobile applications.

Resource: An online survey.

2.2.4 Discuss responses

Level: Advanced

Activity description: Discuss responses from questionnaires

Activity rationale: This activity can be conducted online or face-to-face and is considered an advanced activity. Students will discuss the responses to the questionnaire in activity 3 in groups for 10 minutes. For this activity, students will share a visual overview of their

responses. Questions for discussion will be provided as a starting point for their discussion and will be made available as a PDF file in the LMS. The teacher will be available to help facilitate the group discussion if needed. In this activity, we are still operating at an analyzing and evaluating level according to Bloom's Taxonomy. Additionally, we are working with PRL —principles of collaboration and dialogue, allowing students to reflect on and be curious about each other's responses.

The idea behind this exercise is for the students to collaborate in the learning process. Learning occurs socially, and it is through dialogue that students can analyze and understand their different experiences with the use of mobile applications. The students may have diverse experiences with the applications, which could offer new insights within the group.

Resource: PDF with facilitating questions

2.2.5 Group discussion

Level: Advanced

Activity description: Discuss based on reflective questions

Activity rationale: In this advanced activity, which builds upon activities 3 and 4, the students are to continue the discussion about their experience of using mobile applications in groups for an additional 10 minutes. For this activity, a new set of questions will be provided as a PDF file through the LMS. These questions will be designed to support the students' reflection and be based on the principle of appropriate disruptions (RPL). The purpose of this activity is for students to analyze and evaluate the psychological determinants of using mobile applications through dialogue with their fellow students. To support the discussion, the teacher will be available during the activity.

Resource: PDF with working questions for group discussion

Unit 3: Matching technologies with PwP

3.1: How does the technology help PwP

Basic learning outcome: Students can understand mobile applications from a clinical perspective.

Tasks

3.1.1 See online lecture

Level: Basic

Activity description: See the online lecture.

Activity rationale: This activity is a basic activity, focusing on presenting students with specific facts about the topic and grasping its meaning, based on Bloom's Taxonomy. The activity is performed individually, preferably as part of the preparation for the Unit 3. The topic is mobile applications and how they can assist people with pain management in a clinical setting. An online lecture of approx. 20 minutes are made available to students through the MOOC. The lecture's content is based on existing knowledge about mobile applications used in clinical practice with individuals experiencing pain. The knowledge presented is based on the literature search and the respective results from activity 2.1. The lecture emphasises the Good example in accordance with the Reflective-Practice Based-Learning principles. Therefore, several realistic approaches to the use of mobile applications in clinical practice are presented to the students, with a focus on the aim of mobile application use, the clinical context, and the patient/HCP experience. The goal is to provide students with good examples of how mobile applications have been applied and related to PwP, as well as in different clinical contexts, and to offer examples of how PwP have experienced the use of mobile applications.

Resource: MOOC

3.1.2 Read descriptions

Level: Basic

Activity description: Read descriptions of specific mobile applications for PwP.

Activity rationale: This activity is a basic activity, focused on presenting students with specific facts, providing them with knowledge of various mobile applications. The activity is performed individually, preferably as part of the preparation for the Unit 3, with a duration

of approximately 30 minutes. The topic is mobile applications available for use in clinical practice when working with individuals experiencing pain. Students are provided with a PDF through the MOOC, containing written information and links to various mobile applications relevant to individuals with pain. The activity of the students is to read through the information and explore the different options and possibilities provided by the mobile applications described. The activity is based on Exploration in accordance with the Reflective-Practice Based-Learning principles. The thought is to provide students with background knowledge of specific mobile applications of potential use for PwP. Based on this background knowledge, students should be able to choose among the described mobile applications when facing a situation or learning activity where a mobile application could be an appropriate choice.
Resource: MOOC

3.2: Choosing technology based on PwP needs
Basic learning outcome: Students can apply a specific mobile application based on PwP needs.
Advanced Learning outcome: Students can analyze choice of mobile application based on PwP needs.

3.2.1 See video
Level: Basic
Activity description: See videos presenting a case person (PwP)
Activity rationale: This activity is a basic activity that can also be part of the preparation for unit 3, and it has a duration of 20 minutes. The activity can be completed both individually and in groups. The focus of the activity is to provide students with case information relevant to clinical reasoning related to the choice of a specific mobile application, based on patient needs. The case material is video-based, with a patient providing information on different aspects of the case person's life. Students are provided with the videos on the MOOC and are instructed to view the videos. The video provides information about the needs of a patient with pain. The emphasis in the activity is based on the Reflective-Practice-Based-Learning principle, disturbance. Presented with a video containing case

material related to a PwP, students might begin thinking about how mobile application/s could be relevant to the respective case.
Resource: MOOC

3.2.2 Apply mobile application

Level: Basic
Activity description: Based on descriptions of mobile applications, choose/apply
Activity rationale: This activity is a basic activity with a duration of approximately 15 minutes. With reference to Bloom's Taxonomy, the focus is on application, using information in a new (but similar) situation. The activity builds upon the patient case from Activity 1 in Section 3.2 and utilizes the same written information, as well as links to a variety of mobile applications relevant to individuals with pain, similar to those used in Activity 2 in Section 3.1. With the information available related to both the needs of a specific patient (video case from Activity 1 in Section 3.2) and a variety of possibly applicable mobile applications (pdf from Activity 2 in Section 3.1), students are placed in collaborative groups and are asked to choose which mobile application they consider relevant to apply. In reference to the Reflective-Practice-Based-Learning principles, the activity focuses on dialogue. The goal is to have students discuss and agree on a mobile application tailored to the case's needs. Sharing clinical reasoning among peers to facilitate further learning and knowledge sharing based on each individual student's own knowledge and reflections.
Resource: MOOC

3.2.3 Succeed in quiz

Level: Basic
Activity description: Answer quiz about mobile applications and patients with pain.
Activity rationale: This basic-level activity builds on all activities in unit 3. Students are required to individually answer a true/false quiz based on the content of unit 3. The quiz is available through the MOOC. The quiz is designed to test students' comprehension of the information provided throughout the unit, and its purpose is to help students remember and evaluate their own comprehension of the content. The quiz is automatically assessed, and the score will be visible to the students.
Resource: MOOC (Quiz)

True or False: Mobile health (mHealth) apps for pain management have been shown to improve patient adherence to treatment plans.
Answer: True

True or False: All pain management apps currently available can be assumed to be compliant with good practices of patient data protection and provide clinicians with access to patient data.
Answer: False

True or False: Mobile apps can support remote patient monitoring and provide healthcare providers with real-time data.
Answer: True

rue or False: Mobile apps for pain management are only useful for chronic pain and have no role in acute pain scenarios.
Answer: False

True or False: One limitation of pain management apps is the lack of involvement of healthcare professionals in their development.
Answer: True

True or False: Mobile apps can help patients identify pain triggers and track medication usage.
Answer: True

True or False: Studies consistently show that mobile apps for pain management have no impact on pain severity or quality of life.
Answer: False

3.2.4 Create pitch

Level: Advanced

Activity description: Create a pitch describing the clinical reasoning behind the choice.
Activity rationale: This activity is an advanced activity emphasizing the students' competencies related to taking apart both the needs of a patient and the applicability of several mobile applications, and analyzing relationships between the needs of a specific patient and the relevance of applying a specific mobile application in clinical practice related to the patient in question. The activity has a duration of 45 minutes. The activity builds upon both Activities 1 and 2 in Subsection 3.2 and utilizes information on mobile applications from Activity 2 in Subsection 3.1. Students are in collaborative groups and asked to develop a pitch describing the clinical reasoning behind both the opt-in and opt-out approaches. The format of the pitch is at the presenter's discretion, but the maximum timeframe for the pitch should be approximately. 3-5 minutes. 3.2.4 The pitch is presented in a classroom and is attended by all students (Full Class). During the development of the pitch, the teacher is available for face-to-face discussion and feedback.
Resource: No resource necessary

Unit 4: Using technologies with patients, Real-Life Scenarios

4.1: Preparation and mindset

Basic Learning outcome: Students understand possibilities with incooperation of mobile applications in clinical practice.
Advanced learning outcome: Students can analyze essential parts of the incooperation of mobile applications in clinical practice.

Tasks

4.1.1 See videos

Level: Basic
Activity description: See videos of scenarios.
Activity Rationale: This activity can be used as preparation for this part of the module. Students individually access videos containing examples of real-life scenarios with mobile

applications being used in clinical practice with PwP. The activity is a short 15-minute basic activity, with each video lasting approximately 5 minutes. The videos provide good examples of the integration of mobile applications in clinical practice, in accordance with RPL. In relation to the Real-life scenario framework, this activity utilizes real-life scenarios from the videos as an entry point to an activity, providing students with vivid representations of authentic situations where mobile applications play a significant role.
Resource: MOOC

4.1.2 Describe main points

Level: Basic
Activity description: Based on defined themes, describe the main points from scenarios.
Activity rationale: This is a basic activity that builds upon activity 1 in this subsection. The activity has a duration of 1 hour. This activity can be used as preparation, where students individually use the videos from activity 1 and themes relevant to the possibilities with the cooperation of mobile applications in clinical practice, to describe how each theme is played out in one or more of the three real-life scenarios. The number of themes students are required to describe can be flexible and dependent on the teacher. Here, the focus is on communication related to the patient involving the technology, using written material as a form of dialogue, with the prepared themes providing the students with a point of departure for reflection.
This activity can also be used at a group level. Here, groups of students are provided with themes relevant to the possibilities of cooperation of mobile applications in clinical practice. Based on their individual preparation, including watching the 3 real-life scenarios in activity 1, students engage in communication and reflection. The communication is also related to the patient involving the technology, with the themes used as a point of departure for the reflection on a group level. Conducting this activity on a group level is believed to facilitate further reflection because of the possible stimulating effect different group members can have on each other when engaged in discussion.
Resource: MOOC

4.1.3 Explore

Level: Basic

Activity description: Explore inspirational sources.
Activity rationale: This is a basic activity that builds on both Activities 1 and 2. The activity can be completed both as an individual or a group activity. The students explore sources of further inspiration, which they search for and identify through internet searches. The assigned time for this activity is 30 minutes. The RPL focus is exploration. Therefore, the provided themes serve only as a gateway to further information and/or material that can be explored.
Resource: MOOC

4.1.4 Attend introduction

Level: Advanced
Activity description: Attend the introduction to the Real-Life Scenario development.
Activity rationale: This activity is an advanced activity, with a duration of 20 minutes. The activity serves as an introduction to the following advanced Real-Life scenario activities. Through an introduction at a full class level, the teacher explains the group activities to come, with an emphasis on the availability of dialogue between students and the teacher. This introduction activity places an RLS as the end goal of the entire sequence of the following activities (activities 5-9). The RLS involves student demonstrations, demonstrating communication related to both PwP and the technology, using already completed video activities (Activity 1 / Subsection 4.1) as a point of departure for reflection, and thorough preparation for the final RLS through a sequence of activities that guide the students. The final debriefing of the activity will involve peer feedback, while face-to-face teacher availability will support students in completing the final RLS activity.
Resource: Introducing the sequence of activities, along with the accompanying goal for each activity, is important. How the introduction is carried out is at the discretion of the lecturer.

4.1.5 Work with theme

Level: Advanced
Activity description: Choose and describe essential parts of the chosen theme.
Activity rationale: This is an advanced group activity, with a duration of 45 minutes and face-to-face availability of the teacher, building upon the previous activity. Using the

themes described in activity 2 of Subsection 4.1, students on a group level choose one theme of particular interest to the group. The students should take an analytical approach to producing an extensive and nuanced description of the theme in relation to a PwP specific to their profession. The description of the theme should be approximately. 1 page long and functions as a theoretical offset to transfer theory into practice. Furthermore, the theoretical description of the chosen theme should be used to describe a good example of how the theme can be played out in a Real-life scenario. This Real-life scenario description should be a prepared manuscript for a role-play scenario. Here, students work on creating a simulated patient scenario.
Resource: Video and/or PDF about themes.

4.1.6 Locate application

Level: Advanced
Activity description: Locate a mobile application and describe its associated features in relation to the theme.
Activity rationale: This is an advanced group activity, with a duration of 1.30 hour and face-to-face availability of the teacher, building upon the previous activity. Based on the students' experiences with the chosen theme, they explore available mobile applications to identify a relevant one and describe its features relevant to the theme.
Resource: None necessary

4.1.7 Produce video

Level: Advanced
Activity description: Produce a video scenario capturing the chosen theme related to your own profession.
Activity rationale: This is an advanced group activity, with an approximate duration of 3.00 hours, building upon the previous activity. Using their experiences from the previous activity and the mobile application unit, students produce a video RLS, with a good example, related to their respective profession, of the chosen theme – involving PwP and a mobile application. Students should be presented with the following: Produce a short video (approx. 5 minutes) of a simulated patient scenario. The video should be related to your own field of practice, illustrate the use of a mobile application in conjunction with a PwP

within the context of the theme you have worked with continuously during SubSection 4.1. The video should be uploaded to the LMS.
Resource: None necessary

4.1.8 Peer-feedback

Level: Advanced
Activity description: Engage in peer feedback
Activity rationale: This is an advanced activity, with a duration of 30 minutes, building upon previous activities. Using the provided questions for peer feedback preparation, students prepare material to be used for both receiving and providing feedback.
Resource: Peer-feedback questions

4.1.9 Peer-feedback

Level: Advanced
Activity description: Provide peer feedback.
Activity rationale: This is an advanced activity, with a duration of 30 minutes, building upon previous activities. Groups are paired and engage in peer feedback, based on the material produced, using the peer feedback questions.
Resource: None necessary

4.2: Support and guidance

Basic learning outcome: Students can understand mobile applications from a clinical perspective.
Advanced learning outcome: Students can analyze and evaluate when and why the use of mobile applications is justified in clinical practice.
Basic learning outcome: Students understand the importance of sufficient and appropriate support and guidance when using mobile applications.
Advanced learning outcome: Students can apply support and guidance on an individual level, when using mobile applications in clinical practice.

4.2.1 See video

Level: Basic

Activity description: See video

Activity rationale: This is a basic activity with a duration of 5 minutes, which can be completed individually, in groups, or as a full-class activity. It uses an RLS as the entrance to an activity. The students view a video of an HCP and a PwP having a conversation about the pain experience of the PwP. The conversation serves as a good example of a pain narrative and provides background information that students need for the subsequent activities. The HCP ends the conversation with the PwP by saying, 'I know of a mobile application that could be of use to you.'

Resource: MOOC

4.2.2 Follow instructions

Level: Basic

Activity description: See the video and follow the instructions.

Activity rationale: This is a basic activity, with a duration of 10 minutes. This activity is individual and aims to provide students with their own experience of being a PwP, receiving information on how to download and use a mobile application. The students work individually, following a video recording of an HCP providing instruction on how to download and use a mobile application, introducing relevant features and how/what features to use.

Resource: MOOC

4.2.3 Discuss experiences

Level: Basic

Activity description: Reflect on experiences with receiving instruction.

Activity rationale: This activity is a basic activity on an individual or group level, with a duration of 20 minutes. If individual students are asked to reflect on the experience of receiving instructions on using a mobile application. If on a group level, students engage in dialogue, and discuss and reflect on the instructions provided, using their own experiences to understand the importance of sufficient and appropriate support and guidance when introducing new mobile applications to PwP.

Resource: MOOC

4.2.4 Qualify instruction

Level: Basic

Activity description: Qualify instruction based on patient experience.

Activity rationale: This is a basic activity that can be completed alone or in a group. The activity duration is approximately 1 hour. The students are provided with narratives of patients' experiences with receiving the instruction, which they themselves followed. The narratives provide a disturbance to both their own experiences and the dialogue completed in the previous activity (Activity 3, Section 4.2). Based on the narratives provided, students develop suggestions for changes that could improve the instruction offered. The narratives provided are both negative and positive.

Resource: MOOC

4.2.5 Succeed in quiz

Level: Basic

Activity description: Succeed in the quiz

Activity rationale: This activity is a basic activity, with a duration of 10 minutes. This activity serves as a debriefing and evaluation of the four previous activities. Students answer a multiple-choice quiz to evaluate their knowledge of best practices when providing instruction on the use of mobile applications.

Resource: MOOC (Quiz)

Question ID	Question	Answer	Right answer/answers
1	When applying a mobile application in clinical practice, I consider the following as important.	I check if the patient´s mobile phone is compatible with basic requirements.	x
		I evaluate the safety and security of my patient's data when choosing a mobile application.	x

		The mobile application has face validity related to the pain experienced by the patient.	x
		I ensure that the mobile application is integrated as part of the examination, treatment or rehabilitation.	x
2	Patients who own a mobile phone are digitally literate.		False
2	There is always a mobile application that fits the patient's exact needs.		False
3	What elements are important to support the patient's use of a mobile application?	The healthcare professional instructs the patient in using the mobile application.	x
		The healthcare professional has expert knowledge.	x
		The mobile application applies gamification for motivational purposes.	
		Goal-setting	x
		The healthcare professional works with an individualized perspective on the use of the mobile application	x
4	There is indisputable evidence, that mobile application		False

	has a positive effect on pain.		
5	When providing instruction and guidance to patients about the use of mobile applications	The healthcare professional should try to validate if the instruction provided was understood.	x
		The healthcare professional should try to minimize the comprehensiveness of the instruction.	x
		The healthcare professional could ask the patient to go through some of the most important features	x
6	What should be taken into consideration when advising on the use of a mobile health intervention?	Only the convenience of the intervention.	
		Whether the intervention aligns with the user's preferences.	
		Whether the content is appropriate for the user and any possible adverse effects.	x
		Whether the intervention is endorsed by the healthcare professionals.	
7	Data Protection Impact Assesment is not mandatory in mobile applications used in healthcare		False

8	Which of the following is NOT a concern regarding the use of digital and mobile health interventions?	Encouraging excessive behavior	
		Increasing anxiety about health.	
		Promoting healthy behaviors	x
		Preventing vulnerable people from accessing face-to-face services	

4.2.6 Justify applied application

Level: Advanced

Activity description: Based on the available data in the mobile application, the patient needs to evaluate the justification of the app.

Activity rationale: This activity is an advanced group activity, with a duration of 30 minutes. The activity builds on previous activities. The activity utilizes the video provided in Activity 1, Section 4.2, and the mobile application for which instructions were received in Activity 2, Section 4.2. Considering the features of the mobile application, what information (data) can be collected on the patient's needs from the video (Activity 1, Subsection 4.2). Students explore the arguments for and against the justification of the application related to the specific patient.

Resource: No resource necessary

4.2.7 Improve

Level: Advanced

Activity description: Develop improvements to the app.

Activity rationale: This is an advanced group activity, with a duration of 1.30 hours. The activity builds on previous activities. Based on the evaluation and analysis performed in Activity 6, Section 4.2, the students engage in a creative process aimed at creating improvements to the respective mobile application. Improvements should preferably be

aimed at the patient already in play from previous activities in this subsection. The developed improvements are to be pitched to a collaborative group of students. Therefore, the developments should adhere to the following: highlight improvements through the visualization of changes and provide brief, clinically relevant verbal introductions and instructions to the developments, considering and arguing the clinically relevant reasoning behind the choices made.
Resource: No resource necessary

4.2.8 Pitch

Level: Advanced
Activity description: Pitch suggestions on a group level.
Activity rationale: This is an advanced group activity, with a duration of 30 minutes. The activity builds upon previous activities. In paired groups, students present their suggestions for developing the mobile application and engage in constructive peer feedback with their collaboration groups. Suggestions for developments should be prepared with visualization (drawing, illustrations found on the internet, etc.)
Resource: No resource necessary

4.2.9 Locate app

Level: Advanced
Activity description: Locate an app relevant to your field of practice
Activity rationale: Activities 9 and 10 are very closely related, and no time duration is specified for these activities. In groups, students locate a mobile application relevant to their profession and prepare to apply it while supporting and guiding individuals on an individual level when using the mobile application in clinical practice. Students should look to the Calgary-Cambridge guide for inspiration when preparing to apply the chosen mobile application in clinical practice.
Resource: Calgary-Cambridge skill framework

4.2.10 Locate PwP

Level: Advanced
Activity description: Locate PwP

Activity rationale: Building on activity 9 in subsection 4.2, the groups of students locate a PwP (one per group) who is willing to participate in receiving instructions and guidance on how to use the chosen mobile application. Students are responsible for locating the PwP and making all arrangements necessary related to the appointment with the PwP.
Resource: No resource necessary

4.2.11 Apply instruction

Level: Advanced
Activity description: Apply instruction and guidance on PwP using an app relevant to your field.
Activity rationale: This is an advanced activity, which builds upon activities 9 and 10 in subsection 4.2. The time duration for this activity is 1 hour. In groups or individually, students meet with their respective PwP and conduct the instruction and guidance. This is a real-life patient visit, and as such, the group or individual student should prepare the meeting thoroughly. One member of the group assumes the role of HCP and is the only one who provides instruction and guidance on the mobile application to the patient. When the instruction and guidance have been carried out, a member of the group, other than the member responsible for the instruction, debriefs the patient regarding the patient's experiences and thoughts related to the completed instruction and guidance.
Resource: No resource necessary

De-briefing video on MOOC