Co-funded by the European Union

Digital Skills Training for Health Care Professionals in Oncology (DigiCanTrain)

CURRICULUM

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1. Background of curriculum development

Cancer is one of the most common diseases in Europe. Mainly driven by an ageing population, the burden of cancer is increasing in the EU, with the number of new cases reaching 2.7 million in 2022 (1). The COVID-19 pandemic showed the potential of digitalization to transform the way health care is delivered and therefore building resilience and bringing efficiency, transparency and convenience on health care services (2). eHealth technology, correctly used, can be a very useful tool to facilitate dialogue among health care professionals (HCPs) and meet health and care needs of people affected by cancer. However, despite its current use and despite the positive effects of eHealth technology and its great promise, a vast majority of HCPs may feel insufficiently trained to deal with the digital revolution (3).

The purpose of the DigiCanTrain project was to design, pilot and evaluate DigiCanTrain education and training programme for trainers, clinical and non-clinical HCPs. The aim of the DigiCanTrain curriculum is to provide trainers and trainees with the necessary information for skill development to support clinical and non-clinical workers working in an oncology care setting with the development of effective, person-centred digital health care, digital cancer care services and the use of contemporary digital interventions. Continuing education is an integral aspect of improving professional development (4). However, due to the busy nature of working healthcare professionals the use of more innovative methods to deliver continuous education is required. By being available to a broad audience, and the flexibility it provides for learners, e-learning is very influential to continuous education (4). The DigiCanTrain curriculum is implemented as an e-learning programme. For future use of the curriculum, a guide on the programme delivery will be created following the pilot of the programme and refined based on the experiences and formal evaluation of participants who undertake the pilot.

The importance of healthcare professionals having skills regarding digital health is highlighted in the increasing use of remote consultations in oncology and emphasises the need for digital patient education and support, communication in digital health care context and ensuring the understanding and collaboration of people affected with cancer.

The overreaching goal of the DigiCanTrain programme is to meet the requirement of digital competence for healthcare professionals which was identified in the needs assessment

phase of the project (WP2). Based on the systematic reviews (D2.2), these include information technology, ethical practice, creating a human-oriented relationship and digital patient education and support. Furthermore, the Digital Competence Framework developed in the project was based on two systematic reviews, mapping study and narrative review on existing frameworks, standards and literature was used to guide the development process and the DigiCanTrain Curriculum was mapped against the developed Digital Competence Framework. The mapping of the program's learning outcomes across the developed competence framework is available on project deliverable report 3.1 (on project website)

The DigiCanTrain programme is delivered on the online digital tool Thinglink® embedded in Moodle® platform, an open-source learning management system. Using Thinglink will ensure a visual and interactive learning experience. (Example of a course created in EU project Care for Europe https://www.care-for-europe.eu/mooc_eng.htm). The programme was developed using a micro-credential format. One of the priorities for the European Commission's policy for higher education is the development of micro-credentials (5). Learners want to develop their knowledge and skills at a higher education level; however, there is a desire to achieve these in smaller units which are designed to meet their needs and delivered via more flexible means that fit their lifestyle (6). Micro-credentials provide accessible and flexible opportunities for learners to further their lifelong learning and professional development (5).

"*A micro-credential is a proof of the learning outcomes that a learner has acquired following a short learning experience. These learning outcomes have been assessed against transparent standards*."(7)

The e-learning programme with micro-credential developed to deliver the *DigiCanTrain curriculum* piloted what the project team envisaged as a potential Massive Open Online Course (MOOC) on the topic. MOOCs, an e-learning platform, have altered the delivery of continuing education (4). For an individual's lifelong learning and professional development innovative educational technologies such as MOOCs are appropriate and influential (8). The end goal of the DigiCanTrain project was to develop the curriculum which may be further developed into a MOOC programme or be moved from the university Moodle platform to open European Learning Hub for HCPs working in cancer care.

To enhance the quality of the DigiCanTrain programme and ensure European standards are met, the common micro-credential framework (CMF) which applies to short higher education

programmes or MOOC programmes for ongoing education or professional development (6) guided the development of the DigiCanTrain curriculum. By using this framework, we endeavour to apply a common standard to the e-learning programme developed as part of the DigiCanTrain project. The objective of the framework is to assist in the development of programmes and to facilitate their recognition across European Higher Education Institutions (5). There are a number of standards to meet when designing such programmes (5). Figure 1 demonstrates the requirements of the CMF for micro-credentials (5). How we aim to meet these requirements throughout the DigiCanTrain curriculum which are noted in Table 1.

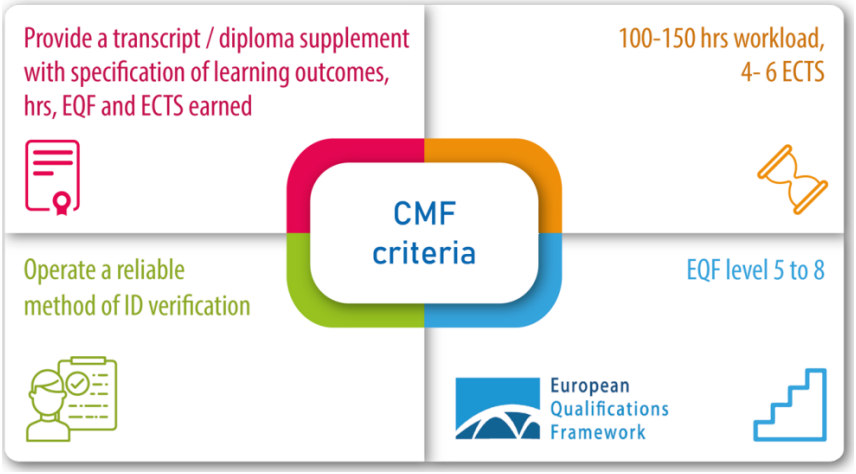

Figure 1. CMF criteria (original source: European MOOC consortium)

CMF requirements	DigiCanTrain curriculum
Total workload of 100-150 hours (4-6 ECTS)	The total number of hours allocated to each module in the DigiCanTrain programme is noted in the 'workload' section of this report. The workload for the DigiCanTrain e-learning programme ranges from 80 to 140 hours depending on learner group. However, participants have the option to complete more modules to increase the number of workload hours.
Reach the European Qualifications Framework (EQF) of level 5–8	The learning outcomes of the e-learning programme has been guided by level 7 of the EQF.
Assess learners to award the credits, such as following successful completion of the course	After every module, learners will complete an assessment e.g. self/peer assessment checklist or a multiple-choice questionnaire on the module content. A pass of 80 % is necessary prior to moving on to the next module.
Provide a reliable method for identification verification at assessment which complies with university policies or a mode which is used across platforms which use CMF	Learners will need to sign into their e-learning programme using their personal email address and password.
Provides students with a transcript which notes the learning outcomes for the micro-credential, total study hours completed, EQF level and the number of credits achieved	Learners will be provided with a transcript after they complete the e-learning program. This transcript/certificate will include relevant details required to ensure micro-credentials validation.

Table 1. CMF criteria and its translation into the DigiCanTrain curriculum

2. Recognition of prior learning

Academic recognition involves evaluating qualifications or a period of study for a learner's admission to a programme of study or exempting them from parts of a programme in an accredited higher education institution (9). Micro-credentials must be available to award learners credit either directly or via recognition of prior learning (RPL) (6). As it may not be feasible to apply accredited credits to the DigiCanTrain programme at this phase as it is a pilot study, the current focus is on ensuring the DigiCanTrain programme meets the criteria of RPL and if seen as possible actions will be taken after the pilot for formal accreditation within the partner universities. RPL is the process which a university acknowledges a learner's past learning and it is taken into consideration when they apply for a formal qualification (6).

The objective of micro-credentials is that they are owned by the learner and they are transferable and can be integrated into credits or courses (7). A methodological approach to the recognition of online modular learning is essential and two European projects have developed these (9). The methodology underpinning recognition of prior learning consists of seven elements as follows (9):

1) quality of the programme

2) verification of the certificate

3) level of the course

4) learning outcomes

5) workload

6) study assessment

7) participant identification.

Each of these criteria contribute to the transparency of the programme which underpins recognition (7).

Quality of the programme

The DigiCanTrain full programme content, quality and educational value of this activity was reviewed by the Accreditation Council of Oncology in Europe (ACOE) in support of Continuing Medical Education (CME). The programme has been recognised of high-quality value both from a scientific and didactic point of view. Thus, this accreditation is valid only for the programme's current content and format and for the time limit of 3 years (2026-2028). The full programme for Trainers pathway was awarded 140 CMEs, participants pathway with four full modules 140 CMEs, ones own professional pathway 80 CMEs. ECTS were admitted by Turku University of Applied Sciences, however, after project ends it needs to be noted that only formal education providers can admit ECTS.

Verification of the certificate

The certificate encompasses elements of the criteria of both the CMF and the seven criteria methodology to clarify the elements needed to help the recognition of online learning. Validated proof of an individual completing one micro-credential course or full programme is in the form of a certificate or transcript. If a learner will complete 80 or 140 hours, a certificate can be admitted. However, the certificate on course (one pathway, 80 hours) or full programme can be admitted by institution/organisation.

The learning outcomes of the modules and submodules are described in the Annex. After every module, assessment takes place in a format of quiz, with a pass requirement of 80%.

Level of the course

The aim of the curriculum is to up-skill and re-skill staff in digital education and healthcare. To fulfil the criteria set out by the CMF, the learning outcomes of the programme have been guided by level 7 of the EQF (10). Table 2 provides a summary of the learning outcomes relevant to level 7 as per the EQF and the associated learning outcomes as part of the DigiCanTrain project.

Level 7 learning outcomes as per EQF (10)	DigiCanTrain curriculum learning outcomes
Highly specialised knowledge, some of which is at the forefront of knowledge, in a field of work or study, as the basis for original thinking and/ or research. Critical awareness of knowledge issues in a field and at the interface between different fields.	Learners will be able to explain the concepts of digital education and digital healthcare in the cancer care setting. Learners will be able to analyse and critically appraise the application of digital health to support the development of effective, person-centred digital health care, digital cancer care services and the use of contemporary eHealth technology.
Specialised problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures, and to integrate knowledge from different fields.	Learners will be able to apply the new digital and teaching skills to teach their peers. Learners will be able to apply the new digital skills to their practice in the cancer care setting.
Manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches. Take responsibility for contributing to professional knowledge and practice, and/or for reviewing the strategic performance of teams.	Learners will be able to integrate their new teaching and digital knowledge, skills and attitudes into the cancer care environment.

Table 2. EQF Level 7 learning outcomes and its translation into the DigiCanTrain curriculum

Learning outcomes

The curriculum is developed for two population groups. The first group consists of clinical workers (nurses, allied health professionals and medical doctors) and non-clinical healthcare workers working in cancer care settings who are involved in teaching or training staff, we will refer to these as the 'Trainers'. The second group consists of healthcare practitioners (HCP) such as clinical workers (nurses, allied health professionals and medical doctors) and non-clinical healthcare workers in cancer care settings. This group is later referred to as 'Trainees'.

The DigiCanTrain curriculum consists of five modules with 22 submodules embedded. Figure 4 provides a list of the module titles alongside the submodules embedded within each module. Modules 3, 4 and 5 are specialist modules, there is a module for the nursing cohort, the medical practitioner cohort, and the non-clinical workforce group.

Module 1 - Train the Trainees

- 1.1 Pedagogical Approaches on Digital Health Literacy and Education
- 1.2 Blended Learning Approach in the Era of Digitalisation
- 1.3 The Future Operating Environments and Education Technology
- 1.4 Remote Learning and Teaching in Oncology
- 1.5 Virtual Reality and Simulation in Post-pandemic World
- 1.6 Digital skills – the Educator's toolkit
- 1.7 Interprofessional Education in the Support of Digitalization of Oncology Services

Module 2 - Interprofessional education

- 2.1 Communication Training for HCPs in Digital Care Environment (HCP and patient coms.)
- 2.2 Advance Care Planning and Digital self-management support in cancer.
- 2.3 Digitalised Interprofessional Work Models in Cancer Care

Module 3 - Cancer nurses - Nursing cohort

- 3.1 Person-centred Care and Digital Self-Management Support in Cancer
- 3.2 Patient Involvement on patient-reported outcome measures (PROMs) and patient-reported experience measures (PREMs) for care and management (health data base)
- 3.3 Remote Monitoring and eConsultation in oncology nursing practice (Nurse to Nurse consultation services)

Module 4 - Specialists (clinical oncology, radiology, surgery) and general medicine - **Medical practictioner cohort**

- 4.1 Digital tools and artificial intelligence (AI) technology in cancer diagnostics
- 4.2 AI methodology as a part of modern radiotherapy planning
- 4.3 Digital decision supporting systems as working environments in implementing genomics to cancer treatment and prevention (Tumor DNA as well as genetic risk for hereditary cancer).
- 4.4 Electronic patients records and real-world data in supporting treatment decisions
- 4.5 eHealth and digital tools in patient surveillance

Module 5 - Non-clinical staff working in health systems and/or health authorities and or non-governmental organisation - **Non-clinical cohort**

- 5.1 Cancer Organisations in Digital Cancer Journey
- 5.2 Collaborative models in building organisation resilience in Oncology
- 5.3 European Crises Response Model in Oncology
- 5.4 Digital Support in Health Care System Resilience and Leadership (Utilization of Data pools in Clinical Settings and Leadership)

Figure 2. DigiCanTrain programme modules and embedded submodules

‘**Trainers’ are expected to take module 1 and 2 and are then to complete one specialist module depending on their professional background**. For example, a nurse would take module 3 – Cancer nurses whereas a non-clinical professional would take module 5 - Non-clinical staff working in health systems and/or health authorities and or non-governmental organisation. To ensure inclusivity, we also propose a pathway for allied health professionals such as physiotherapists and/or radiographers. We propose that this group will take module 1 and 2 and have the option to complete any of the specialist modules which they believe best suits them in relation to their clinical practice.

The second group, ‘Trainees’ will take the second module - Interprofessional education and then one specialist module depending on their professional background, for example medical professionals would take module 4 - Specialists (clinical oncology, radiology, surgery) and general medicine. A module pathway for each learner group can be noted in figure 5.

There will also be a short introductory module to provide learners with an overview of the DigiCanTrain program. Within this introductory module each country will be asked to provide a country-based summary on the digitization of oncology care in their country. Introduction module also includes general information about the DigiCanTrain programme and practical instructions.

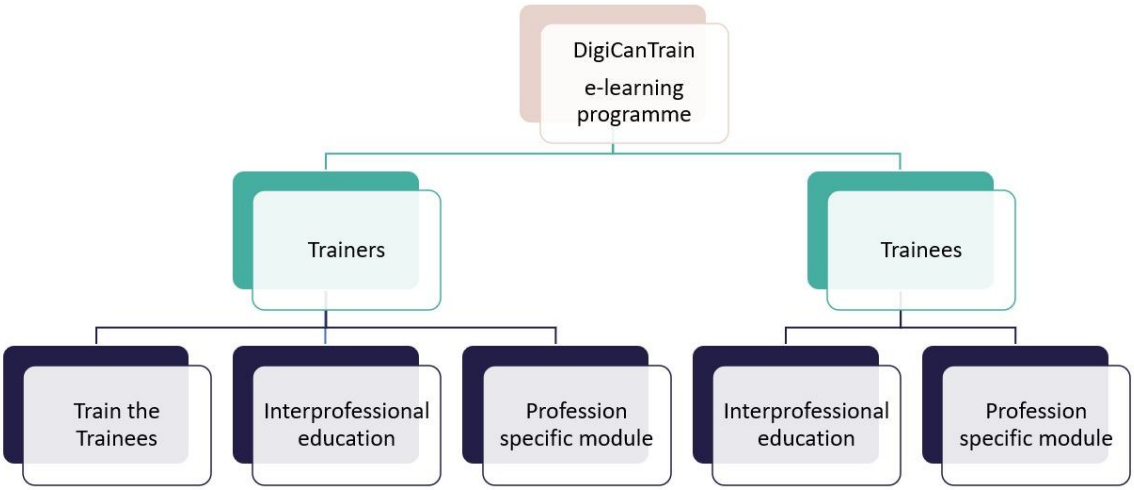

Figure 3. Module pathway for each learner group

Workload

We provide the number of workload hours expected for learners to complete modules. The workload hours provide a common language regarding learner effort among disciplines. In relation to those who follow the European credit transfer system (ECTS), 25 hours of work equates to 1 ECTS (13). Similarly, for those who use Continuing medical education (CME), one CME credit equates to one hour which the learner spends in an educational activity (14). Careful consideration was given to allocating the total workload hours of this programme due to the busy nature of the professional's work life with the aim to ensure a feasible and realistic time commitment to complete the learning activities and assessments. The proposed maximum workload for each micro-credential will be noted on the learner's certificate. Figure 6 provides a breakdown of the proposed maximum number of hours for each module.

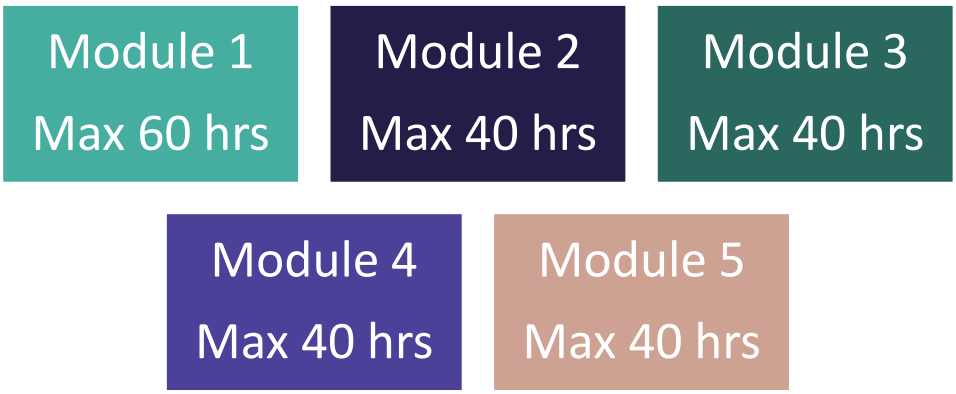

Figure 4. Workload per module

The 'Trainers' will complete three modules (and introductory module) equating to a maximum of 140 hours. The 'Trainees' will undertake two modules (and introductory module) equating to a maximum of 80 hours. However, either group can also complete the remaining professional specific modules as an optional

component to increase their workload hours. For example, a nurse in the 'Trainees' group will complete module 2 and 3 however they can also take module 4 and/or 5 if they wish. Figures 7 & 8 provide a visual of the module pathway for each cohort (nurse, medical practitioner, non-clinician) depending on whether they are in the 'Trainer' group or the 'Trainee' group.

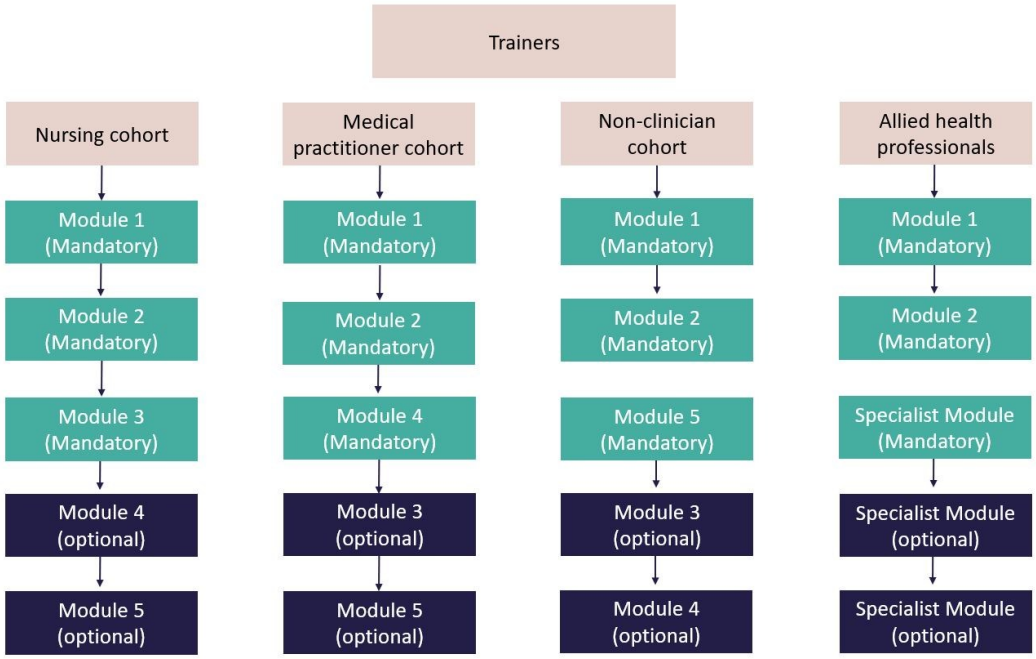

Figure 5. Module pathway for each cohort (nurse, medical practitioner, non-clinician or allied health professional) in the 'trainer' group.

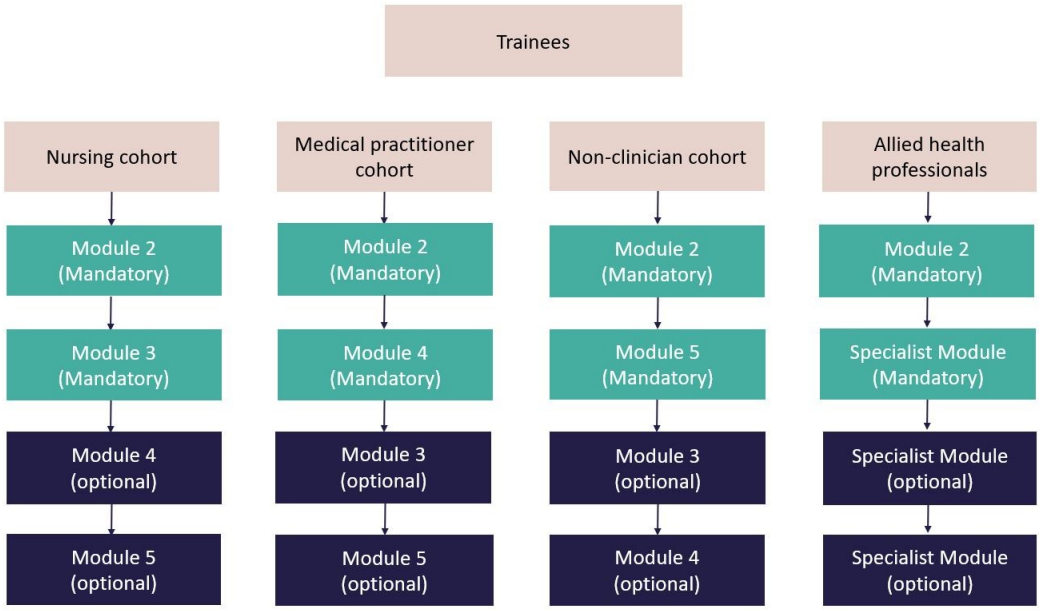

Figure 6. Module pathway for each cohort in the 'Trainees' group.

Study assessment

After completing each sub-module, the learner will complete a final assessment, envisaged to be in form of a quiz or multiple-choice questionnaire. The learner must achieve a pass rate of 80%.

Participant identification

The participant will register and create account on the Turku UAS Moodle platform. The trainer participant or participant can print PDF certificate with their name once completed a module, thus there is only hours are on the certificate. Full certificate can only be admitted by an institution/organisation. Personal data is not collected or saved on the platform.

3. Evaluation

After each module/submodule, learners will be asked to provide an evaluation. This will need to be completed prior to learners moving onto the next module or completing the program. Figure 9 details an example of the evaluation to be completed by learners using a Likert scale. The objective of the evaluation is to ascertain if learners perceive the module has met their expectations in relation to their knowledge, skills, and attitudes.

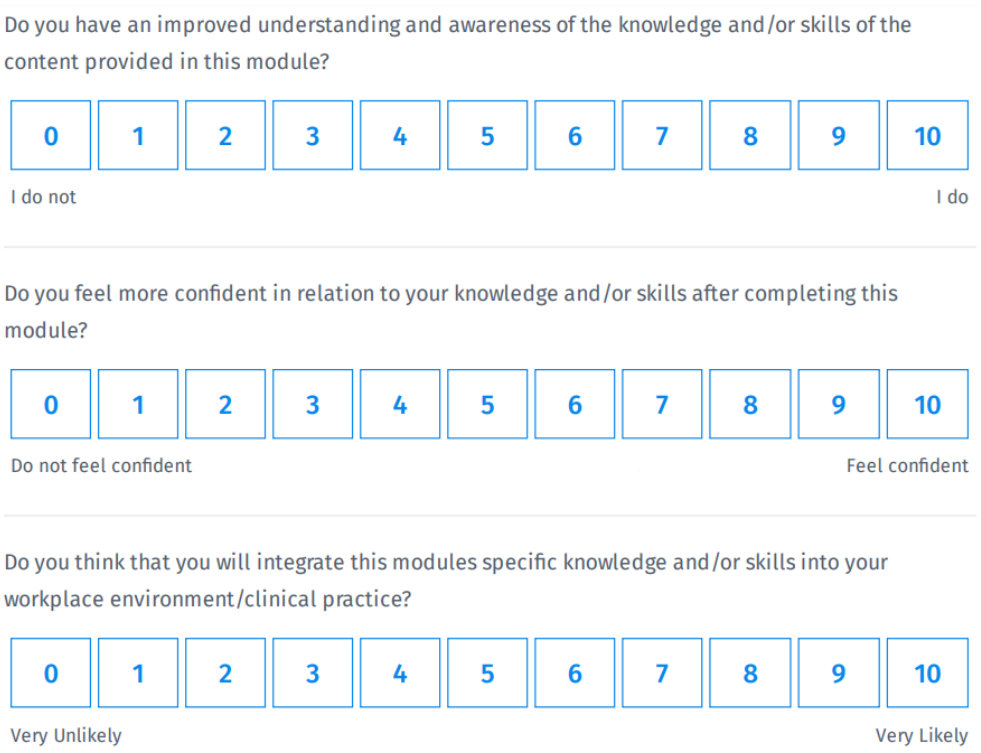

Figure 1. Evaluation of submodules/modules

References

1. European Cancer Information System (ECIS). Statistics 2022 [Internet]. Available from: https://ecis.jrc.ec.europa.eu/

2. Penedo FJ, Oswald LB, Kronenfeld JP, Garcia SF, Cella D, Yanez B. The increasing value of eHealth in the delivery of patient-centred cancer care. Lancet Oncol. 2020 May;21(5):e240–51.

3. Committee on Digital Skills for Health Professionals. Digital skills for health professionals. [Internet]. 2016. Available from: https://www.healthparliament.eu/wp-content/uploads/2017/09/Digital-skills-for-health-professionals.pdf

4. Aung KT, Ali NAM, Zaid MM, Shaharzan NJ. Massive Open Online Course (MOOC) in Continuous Nursing Education (CNE): Contributions and Challenges: A Review. IIUM Med J Malays [Internet]. 2022;21(2). Available from: https://journals.iium.edu.my/kom/index.php/imjm/article/view/1913

5. Antonaci A, Henderikx P, Ubachs G. The European Common Micro-credentials Framework for MOOCs and Short Learning Programmes. J Innov Polytech Educ. 2021;3(1).

6. European MOOC Consortium. EMC Common Microcredential Framework. 2019.

7. Futures HS, Andersen T, Larsen KN. A European approach to micro-credentials [Internet]. 2020. Available from: https://education.ec.europa.eu/sites/default/files/document-library-docs/european-approach-micro-credentials-higher-education-consultation-group-output-final-report.pdf

8. Bettiol S, Psereckis R, MacIntyre K. A perspective of massive open online courses (MOOCs) and public health. Front Public Health. 2022 Dec 14;10:1058383.

9. Nuffic. The Rise and Recognition of -Micro-credentials - Stacking Modules and the Future of the Qualification. 2022.

10. European Commission. Directorate General for Employment, Social Affairs and Inclusion., editor. The European Qualifications Framework: supporting learning, work and cross-border mobility: 10th anniversary. Manuscript completed in February 2018, 1st edition. Luxembourg: Publications Office of the European Union; 2018.

11. Hokkanen L. Bloom Taxonomy Action Verbs and Activities.

12. Anderson LW, Bloom BS. A taxonomy for learning, teaching, and assessing: a revision of Bloom's. Pearson new international edition. Harlow: Pearson Education; 2014. (Always learning / Pearson).

13. European Commission, Directorate-General for Education, Youth, Sport and Culture. ECTS users' guide 2015 [Internet]. Publications Office of the European Union; 2015. Available from: https://data.europa.eu/doi/10.2766/87192

14. The American Academy of Child and Adolescent Psychiatry. CME Credits [Internet]. [cited 2024 Jan 8]. Available from: https://www.aacap.org/AACAP/CME_and_Meetings/CME/CME_Credits.aspx

Appendix 1. The DigiCanTrain Curriculum Learning outcomes

The DigiCanTrain curriculum consists of five modules with 22 submodules embedded. There is also an introductory module (not assessed).

Module 1 Train the Trainees

Learning outcomes

Upon completion of this module, the learner will:

• Be able to explain the different learning theories guiding adult learning in digital health (Knowledge)

• Be able to apply different remote and distance learning methods in their own teaching (Skills)

• Understand the value of using different digital teaching and learning methods in delivery of education to improve digital competences of HCPs (Attitude/Value)

Sub Module	Learning outcomes	Content
1.1 Pedagogical approaches on digital health literacy and education	**Upon completion of this sub module, the learner will:** -Be able to explain various learning theories guiding adult learning in digital health (Knowledge) -Be able to apply the different digital pedagogy solutions according to different learning theories (skills) -Be aware of their own views and the views of others on the relevance of digital health literacy (Attitude)	1.1.1 Digital health literacy in adult learning and learning orientations of different generations 1.1.2 Different learning theories guiding digital pedagogy 1.1.3 Different digital pedagogy solutions according to different learning theories
1.2 Blended learning approach in the era of digitalisation	Upon completion of this sub module, the learner will: -Be able to explain what is meant by meant by the terms 'blended learning',	1.2.1 Exploration of blended learning experiences

	asynchronous and synchronous learning and their benefits and challenges (Knowledge) - Be able to apply strategies that create and maintain multidisciplinary peer engagement, communication and support (Skills) -Be aware of their own and others preferences and difficulties with blended learning (Attitude)	1.2.2 Overview of blended learning (terminologies, benefits, challenges) 1.2.3 What is meant by a 'community of enquiry' and engaging learners.
1.3 The future operating environments and education technology	Upon completion of this sub-module, the learner will: -Be able to explain future operating environments and education technology (knowledge) -Be able to apply new education technology (apps, available software) in cancer care education (Skills) - Be aware of their own views on the opportunities/value of the use of education technology in future operating environments (attitudes)	1.3.1 Future operating environments in education (e.g. 360) 1.3.2 Education technology 1.3.3 Role of the trainer in future operating environments in education and education technology
1.4 Remote learning and teaching in oncology	Upon completion of this sub-module, the learner will: -Be able to explain what is meant by remote learning and teaching and the different modes of remote learning (e.g. videos, discussion boards, pre-recorded presentations) (Knowledge) - Be able to apply different modes of remote teaching in relation to universal design for learning (Skills)	1.4.1 Distinguishing between remote and blended learning 1.4.2 Reflection on personal experiences of remote learning 1.4.3 Different modes of delivery in remote learning

	-Be aware of their own preferences and any difficulties with remote learning (Attitude)	1.4.4 Designing teaching with universal design for learning principles
1.5 Virtual reality and simulation in a post-pandemic world	Upon completion of this sub-module, the learner will: -Be able to explain the basic principles and terminology of Immersive technologies and Simulation learning using examples of simulation tools (Knowledge) -Be able to use some immersive technologies and Simulation tools in cancer care training (Skills) -Be motivated to foster/ enhance attitudes towards the potential of using immersive technologies and Simulation tools (Attitude)	1.5.1 Learning approaches in immersive technologies and in Simulation 1.5.2 Using immersive learning technologies in education 1.5.3 Simulation practices and developing scenarios for training
1.6 Digital skills-the educator's toolkit	Upon completion of this sub-module, the learner will: -Explain their trainer role in the DigiCanTrain programme delivery (Knowledge) - Apply teaching, learning and assessment materials, methods and tools in teaching and supporting trainees (skill) -Understand the basics of cybersecurity as essential to protect patient data (Attitude)	1.6.1 How to create a toolkit consisting of teaching, learning and assessment materials and tools. 1.6.2 Selection of materials and tools adaptable on own teaching 1.6.3 How to support trainees during the learning process 1.6.4 Principles of Cybersecurity and protecting and sharing data in a safe digital environment.

1.7 Interprofessional education in the support of digitalization of oncology services	Upon completion of this sub-module, the trainer will be able to: -Explain profession-specific roles, competences, and responsibilities in support of digitalization of oncology services (Knowledge) - Assess barriers and solutions for effective communication in interprofessional education. (Skill) -Recognise the value of communication, teamwork, interprofessional relationships and interprofessional interactions in interprofessional education. (Attitude/value)	1.7.1 Communication, teamwork, interprofessional relationships and interprofessional interactions in interprofessional training 1.7.2 Profession-specific roles, competences, and responsibilities in support of digitalisation of oncology services. 1.7.3 Values and ethics in support of interprofessional education 1.7.4 Barriers and solutions for effective communication in interprofessional education.

Module 2 Interprofessional Education

Learning outcomes

Upon completion of this module, the learner will:

• Be able to identify the tools to support and promote the patient's own process of self-management and decision making (Knowledge)

• Be able to use different tools and strategies for improved interprofessional communication (Skills)

• Be able to recognise enablers and barriers in interprofessional digital communication to promote collaboration, co creation and sharing of knowledge (Attitude/Value)

Sub Module	**Learning outcomes**	**Content**
2.1 Communication training for HCPs in	Upon completion of this sub-module, the learner will:	2.1.1 Nature, purpose, and function of digital communication

Digital Care Environment (HCP and patient communication)	-Recognise the different nature, purpose, and function of digital communication, collaboration and participation. (Knowledge) - Assess different types of digital communication, collaboration and participation strategies, forms, and channels used in individual situations with person-centred manner. (Skills) - Be confident in implementing different types of digital communication, collaboration and participation strategies, forms, and channels for health care professionals (HCP) and used in HCP and patient communication. (Attitude)	2.1.2 Different types of digital communication, collaboration and participation strategies, forms, channels, and tools for health care professionals (HCP) used in HCP and patient communication in empowerment, teaching, coaching, mentoring, and supporting patients' and caregivers. 2.1.3 Use of digital technologies to communicate respectfully, professionally, and ethically across different settings and populations. 2.1.4 Digital networks (local, national, and international)
2.2 Advance care planning (ACP) and digital self-management support in cancer	Upon completion of this sub-module, the learner will: -Be able to identify the principles underpinning advance care planning and patient's engagement on shared decision-making and explain the role of digital self-management to support patients in their needs of care. (Knowledge) - Be able to assess the effects of mobile health (mHealth) apps on patients' self-efficacy in the advance care planning process,	2.2.1 What is advance care planning (ACP) 2.2.2 Principles underpinning cancer patients' readiness for ACP 2.2.3 What is patient engagement in ACP 2.2.4 How can digital self-management support patients to reflect on values, preferences and wishes about their needs of care 2.2.5 What type of tools support better patient self-efficacy in ACP

	considering both enablers and barriers factors to their use. (Skills) - Recommend a digital self-management approach to facilitate the patient's readiness to advance care planning process. (Attitude)	process and what are the main enablers and barriers to their use.
2.3 Digital interprofessional work models in cancer care	Upon completion of this sub-module, the learner will: -Be able to describe different digital tools and technologies for interprofessional collaborative processes, and for co-construction and co-creation of resources and knowledge (Knowledge) -Be able to share data, information, and digital content through appropriate digital technologies with the appropriate safety and ethical precautions (Skills) -Be motivated to execute positive, sensitive, and professional attitudes and behaviours in communicating, collaborating, and participating in digital health (Attitude)	2.3.1 Different types of digitalised interprofessional work models in cancer care for health care professionals (HCP) and used in HCP (and patient) communication. 2.3.2 Use of digital tools and technologies for interprofessional collaborative processes, and for co-construction and co-creation of resources and knowledge. 2.3.3 Safety and ethical precautions in sharing data, information, and digital content through digital technologies in interprofessional collaboration. 2.3.4 The benefits of using digital tools for interprofessional collaboration for patients and professionals.

(Specialist) Module 3 Cancer Nurses

Learning outcomes

Upon completion of this module, learners will:

• Be able to identify appropriate digital interventions in providing person-centred care in the cancer care pathway (Knowledge)

• Be able to appropriately use PROMs and PREMs in remote monitoring and eConsultations in the cancer care pathway (Skill)

• Be motivated to adopt appropriate use of digital interventions in the cancer care pathway (Attitude/Value)

Sub Module	Learning outcomes	Content
3.1 Person-centred care and digital self-management support in cancer	Upon completion of this sub module, learners will: - Be able to explain the principles of person-centred care in digital cancer care. (Knowledge) - Assess relevant digital interventions and tools for person-centred care and digital self-management support in direct patient care and caregivers' support, and implement at least one digital intervention safely (Skill) - Motivated to use and promote digital interventions in provision of person-centred care and digital self-management support. (Attitude)	3.1.1 Digital interventions in empowerment, teaching, coaching, mentoring, and supporting patients' and caregivers and evaluation of the feasibility of such interventions. 3.1.2 Common benefits and barriers on the use of digital interventions in person-centred care and self-management support. Using appropriate assessment tool(s) 3.1.3 Assessing patient's and caregiver's/family members individual situation and support needs, and their capabilities, resources and willingness to use digital health services. 3.1.4 Provision of sufficient and relevant information by tailoring of digital content and information according to patients' and caregivers' situation and needs.
3.2 Patient involvement in	Upon completion of this sub-module, the learner will:	3.2.1 Overview of PROMs and PREMs.

PROMs and PREMs for care and management (health database)	-Describe what is meant by a digital PROM and a PREM, and outline current evidence on their benefits and barriers to their implementation in the cancer care pathway (Knowledge) - Identify the key moments when to use digital PROMs and PREMs in the cancer care pathway (Skill) - Understand the importance of using appropriate skills when providing timely, structured feedback of PROMs and PREMs to patients (Attitude)	3.2.2 Nurse consultation using PROMs & PREMs 3.2.3 Implementation and administration of PROMs and PREMs. 3.2.4 How to provide patient feedback
3.3 Remote monitoring and eConsultation in oncology nursing practice (Nurse to Nurse consultation services)	Upon completion of this sub-module, the learner will: -Be able to explain what is meant by remote monitoring and eConsultations and the different ways of using remote monitoring and eConsultations and its benefits and barriers in oncology nursing practice (Knowledge) - Be able to apply remote monitoring and eConsultations to their oncology nursing practice (Skill) - Be confident and motivated to introduce or use remote monitoring and in eConsultations in their oncology nursing practice (Attitude)	3.3.1 What is patient remote monitoring and eConsultation 3.3.2 What are the benefits and barriers in using patient remote monitoring and eConsultation 3.3.3 Nurses' roles in remote monitoring and eConsultations

Module 4 Specialist Module (Clinical Oncology, Radiology, Surgery) & General Medicine

Learning outcomes

• Be able to explain current digital interventions, digital tools and AIs commonly used in oncology (Knowledge)

• Be able to apply different types of digital interventions, digital tools and AI as part of cancer treatment (Skill)

• Understand benefits and barriers of using different types of digital interventions, digital tools and AI as part of cancer care (Attitude)

Sub Module	Learning outcomes	Content
4.1 Digital tools and artificial intelligence (AI) technology in cancer diagnostics	Upon completion of this sub module, learners will: - describe the digital tools and AI commonly used in oncology, its latest developments and possibilities in cancer diagnostics (Knowledge) - be able to adopt digital tools and AI technology that are used in cancer diagnostics when available in their work unit (Skill) - Understand the value of digital tools and AI Technology in cancer diagnostics (Attitude)	4.1.1 Introduction of the whole module contents 4.1.2 Commonly used digitals tools and AI technology in cancer diagnostics 4.1.3 How digital tools and AI technology can be used in cancer diagnostics 4.1.4 Role of digital tools and AI technology in pathology and radiology 4.1.5 Barriers and enablers to using digital tools and Ai in cancer diagnostics
4.2 AI methodology as a part of modern radiotherapy planning	Upon completion of this sub-module, learners will: -Be able to explain how AI methodology has been introduced in radiation oncology, latest developments and possibilities in modern radiotherapy planning (Knowledge) - Be able to apply AI methods in radiotherapy planning when the technology is available in the radiotherapy unit (Skill) - Be able to recognize AI methods prospects in radiotherapy planning (Attitude)	4.2.1 What is AI technology in radiotherapy planning 4.2.2 Role and use of AI in radiotherapy planning 4.2.3 Barriers and enablers to AI methods in radiotherapy planning

4.3 Digital decision supporting systems as working environments implementing genomics to cancer treatment and prevention (Tumor DNA as well as genetic risk for hereditary cancer)	Upon completion of this sub-module, learners will: -Be able to describe the basics of genomics, particularly as it relates to cancer. (Knowledge) - Be ablet to Interpret digital genomic data, which may include DNA sequencing results and genetic risk assessments and how to integrate this data into patient care, treatment decisions, and prevention strategies. (Skill) - Will understand the value of digital decision support systems and how these systems work in cancer treatment and prevention. (Attitude)	4.3.1 Genomics and Cancer: Key concepts of genomics and its relevance in cancer. The role of genetic mutations in cancer development. How genomics can be applied to personalize cancer treatment and prevention 4.3.2 Data Interpretation and Integration: genetic mutations, their role in cancer development, and the impact of genomics on personalized treatment and prevention strategies. DNA sequencing results and genetic risk assessments. Genomic data integration into patient care plans and decision-making processes. 4.3.3 Role of Digital Decision Support Systems: the function and operation of digital decision support systems in genomics. the capabilities and limitations of these systems in clinical practice. 4.3.4 Potential benefits and limitations of genomics in cancer care
4.4 Electronic patients records and real-world data in supporting treatment decisions	Upon completion of this sub-module learners will: -Be able to describe latest developments and possibilities of electronic patients records and real-world data in supporting treatment decisions (knowledge) - Know how to use digital information in treatment decisions (skill)	4.4.1 The latest developments in real-world data and electronic patients records in supporting treatment decisions 4.4.2 How real-world data and electronic patients' records can be

	- Understand benefits and barriers of real-world data for making treatment decisions (Attitude)	used in supporting treatment decisions 4.4.3 Barriers and enablers of the use of real-world data and electronic patients records in supporting treatment decisions (ethical perspectives, technical limitation, skills needed)
4.5 eHealth and digital tools in patient surveillance	Upon completion of this sub-module learners will: -Be able to describe current digital interventions commonly used in oncology and latest developments in cancer patient surveillance (Knowledge) - Be able to apply different types of digital interventions in cancer patient surveillance (Skill) - Understand value and opportunities of digital interventions in cancer patient surveillance (Attitude)	4.5.1 Current digital interventions used in cancer patient surveillance 4.5.2 How digital interventions can be used in cancer patient surveillance – using examples 4.5.3 Barriers and enablers to eHealth and digital tools in cancer patient surveillance

Module 5 Non-clinical Module (Staff working in health systems and/or health authorities and or NGO)

Learning outcomes

Upon completion of this module, learners will:

• Be able to describe the role of cancer organisations, analyse their influence on patient experiences, and propose strategies for improving digital patient-centred care (Knowledge)

• Be able to apply skills in diverse digital communication and collaboration strategies, securely and effectively at local, national, and international levels and capable of facilitating the use of digital tools for patient care during various crises that may affect cancer care. (Skills)

• Be able to comprehend knowledge management principles and key efficiency metrics/indicators for enhancing digital cancer care leadership and organisational success. (Attitude)

Sub Module	Learning outcomes	Content
5.1 Cancer organisations in person-centred digital cancer care **New Title**	Upon completion of this sub module, learners will: - Be able to describe the role, needs and structure of cancer organizations in person-centered digital care. (Knowledge) -Be able to propose strategies for improving digital patient-centered care through collaboration with cancer organizations. (Skills – Application) - Be aware of the influence and role of cancer organizations on the patient experience and continuous improvement of care (Attitude)	5.1.1 Key concepts of person-centred care. 5.1.2 Specific needs of cancer organizations in digital care 5.1.3 Digital technologies applied to person-centred cancer care 5.1.4 Evaluating quality of digital patient-centred care 5.1.5 Effective collaboration between cancer-organizations
5.2 Collaborative models in building organisation resilience in oncology	Upon completion of this sub-module, learners will: -Be able to explain different types of digital communication, collaboration and participation strategies, forms, and channels that are important for building organisation resilience in oncology. (Knowledge) - Be able to choose and utilise suitable digital communication, collaboration and participation strategies when operating within and across digital networks at the local, national, and international levels and apply guidelines, regulations and best practices when working with personal, public, professional and/or confidential digital information, data, and content in collaboration across different actors in oncology (Skills) - Be able to execute positive, sensitive, and professional attitudes and behaviours in communicating, collaborating, and participating in digital health (Attitude)	5.2.1 Different types of digital communication, collaboration and participation strategies, forms, and channels in building resilience in organizations and how to choose suitable one. 5.2.2 Guidelines, regulations and best practices when working with personal, public, professional and/or confidential digital information, data, and content while collaborating. 5.2.3 The benefits of using digital tools for collaborative models in building resilience in oncology.
5.3 European Crises response model in oncology	Upon completion of this sub-module, learners will:	5.3.1 Main crises that can have an impact on cancer care.

	- Be able to recognize and describe the characteristics associated with the different crises in the context of cancer care and explain the role of digital tools in cancer care crises. (Knowledge) -Be able to assess the needs of cancer patients in crises situations and identify/apply strategies to support their care. (Skills) - Be able to describe case study examples involving cancer care crises and discuss possible solutions to improve patients care during such situations (Values)	5.3.2 Key needs of cancer patients and cancer care in crisis situations 5.3.3 Addressing specific needs of cancer patients and cancer care in crisis situations. 5.3.4 What is the role of digitalization in the cancer care crisis and which type of tools are encouraged (e.g., telemedicine, translation technology). 5.3.5 Case study examples (e.g., Italy and Turkey during earthquakes, former Yugoslavia during 1990s conflict COVID-19 pandemic, Russia's attack to Ukraine, Israel-Palestine conflict).
5.4 Digital support in healthcare system resilience and leadership (Utilisation of data pools in clinical settings and leadership)	Upon completion of this sub-module learners will: -Be able to describe key efficiency metrics used in own organisation and identify key development areas (Knowledge) -Be able to critically evaluate quality and efficiency indicators produced information and how to implement the information to improve current cancer care services (Skill) -Be able to explain knowledge management principles in digital cancer care leadership and its value on organisation success (Attitude)	5.4.1 Knowledge management in leadership & integration of AI. 5.4.2 What are different types of healthcare efficiency and quality indicators. Digital metrics to assess the health system 5.4.3 Using digital healthcare data in clinical care and leadership.