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Introduction to the BeWell competence matrix and submatrices on digital skills and competences

This document aims to respond to what was formulated in the BeWell application with the establishment of a common methodology for the design of qualifications and their corresponding recognition of non-formally and informally acquired competences as prior learning (VNIL/RPL)¹. It is developed in accordance with the principles of the European Qualifications Framework (EQF), and operationalised through the specifications of the European Credit system for Vocational Education and Training (ECVET):

1. To establish relevant qualification and competence definitions described in matrices according to EQF/ECVET principles as units of learning outcomes at EQF levels 4-6.
2. To the extent possible present the competence matrices as transnationally valid qualifications in multilingual formats
3. To prepare assessment and validation procedures to secure that non- and informally acquired skills and competences are honoured in balance with formal education in settings where this can be realised
4. To facilitate certification and recognition of skills and competences as full qualification cycles or based on microcredentials as shorter training programmes or courses according to delivery of training provisions
5. To set up, organise and implement career pathway tracking of individuals carrying skills portfolios stemming from the delivered training provisions in BeWell

These ambitions will in practice be implemented in the sense that a framework will be defined as a Sectorial Framework of Qualifications (SQF), but inside the conceptual approach of the European Qualification Framework initiative. This is mirroring the fact that the European Commission is governing the EQF, whereas a sectorial initiative remains with the responsibility of the respective stakeholder community. At this stage of the process, it is defined as the project partnership in BeWell. For recognition purposes the competence matrices may later on be matched against national, regional or institutional requirements and specifications.

The EQF is operationally defined as a system of descriptors of qualifications based on learning outcomes, regardless of how or where these are achieved. This BeWell matrix may serve as a reference tool to compare the qualification levels of the different qualification systems. The intention is also to promote both lifelong learning and equal opportunities in the knowledge-based society, as well as the further integration of the European labour market, while respecting the diversity of national

¹ Validation of non-formal and informal learning/Recognition of Prior Learning

education systems, as indicated above. With a well-defined matrix of competences, future recognition of individual's prior learning as well as permeability and portability between different strands of health education and training will be facilitated.

One aspect of this is to strive for transparency across languages, training cultures and workplace requirements. This will on the one hand require comparable learning outcome descriptions, made valid through plurilingual versions of competence matrices and with reliable assessment procedures. The operational part of this will be VNIL/RPL procedures, where validation of non- and informally acquired skills and competences can be assessed and made visible and with optional recognition of all types of prior learning. This will partly be obtained through use of the Skillsbank platform holding parallel matrices in partner languages and with a first level self-assessment option available. In the training programmes there will be different sets of quizzes defining the stepwise progression. Verification of participation and achievements as competence profiles and spider graphs reflecting an individual's performance will be issued and can serve as identification tools to help in the process of selecting programmes or learning experiences for further up- or reskilling.

For a full recognition of performance, competent bodies representing accredited systems must be involved. This can be at national or regional level, but with the BeWell system as a SQF structure the training providers, when an official organisation, may also issue certificates stating the learning outcomes achieved. With the multilingual options in Skillsbank an individual may have a certificate or verification document in parallel language versions meeting the needs for transnational transparency. This may also be supported through an implementation of Europass digital credentials according to the EDCI² principles.

The main characteristics of the EQF:

The EQF represents a tremendous paradigm shift in education and training:

- On the one hand it defines qualifications according to levels, using a stepwise approach with descriptors according to each level's complexity and level of professionalism, responsibility, expertise and performance requirements.
- Secondly the EQF caters for Qualifications as such, with the capital Q, regardless of type of provision (traditional Vocational Education and Training, Higher Education studies or through work-based learning). This applies directly to the need for permeability and portability between flexible training pathways.
- Thirdly, there is a shift from input factors (study volume and length, number of curriculum pages etc) to a documentation of achieved learning outcomes.
- Finally, the use of learning outcomes as a documentation of obtained professional attainment, not only the intended outcomes and educational aims

² Europass Digital Credentials Infrastructure

and objectives as found in traditional curricula, opens up for flexibility and portability of acquired competences according to performance criteria.

Learning outcomes may be defined as “statements of what a learner knows, understands and is able to do after completion of learning. In other words, Learning Outcomes determine the advancements of learning gained by a learner after a period of study or training, in terms of knowledge, skills and competences”. Caspersen, J., de Lange, T., Prøitz, T.S., Solbrekke, T.D., Stensaker, B.: LEARNING ABOUT QUALITY – Perspectives on learning outcomes and their operationalisations and measurement. Department of Educational Research, University of Oslo and NIFU – the Nordic Institute for Studies in Innovation, Research and Education, Oslo 2011.

In a nutshell the EQF may be seen as:

1. A meta-framework with 8 levels
2. A translation device between different qualification systems and their levels
3. Covering the entire range of qualifications from the basic level to the highest professional qualifications, academic as well as vocational
4. Facilitating the linking together and integration of different processes, initiatives and instruments
5. Learning outcomes are in focus – replacing previous input-based curricula as tools for qualification descriptions
6. Learning outcomes descriptors applied for each level
7. The learning outcomes are in general broken down into three dimensions: knowledge, skills and competence. The revised version of the EQF (2017) rephrased competence with “responsibility/autonomy” as a descriptor term for the ability of the learner to apply knowledge and skills autonomously and with responsibility, whereas the labour market orientation, in UNESCO/UNEVOC³ and ILO⁴ terms, is more often phrasing this as “Competence includes responsibility and autonomy required for competent performance in the workplace”, (documents/projectdocumentation/wcms_645065.pdf Gasskov, 2018, 6) in [UNESCO-UNEVOC TVETipedia Glossary](#). For similar reasons the term Competence will be used in this qualification matrix.

³ The United Nations Educational, Scientific and Cultural Organization International Centre for Technical and Vocational Education

⁴ Training and International Labour Organisation

Matrix development

The three dimensions in BeWell workplace-oriented settings are defined in the matrices as below:

1. **Knowledge:** The outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of study or work. In the context of the European Qualifications Framework, knowledge is described as theoretical and/or factual
2. **Skills:** The ability to apply knowledge and use know-how to complete tasks and solve problems. In the context of the European Qualifications Framework, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments)
3. **Competence:** Defined in Cedefop database on «Terminology of European education and training policy» as the “demonstrated ability to use knowledge, know-how, experience and – job-related, personal, social or methodological – skills, in work or learning situations and in professional and personal development. Competence is not limited to cognitive elements (involving the use of theory, concepts or tacit knowledge); it also encompasses functional aspects – including technical skills – as well as interpersonal attributes (e.g. social or organisational skills) and ethical values. (In the context of the European Qualifications Framework, competence is described in terms of responsibility and autonomy.)

The learning outcomes are organised in logical units. Each of the units are composed as a collection of the learning outcomes belonging to a specific and well-defined part of the qualification. When necessary, the learning outcomes are further broken down according to the required complexity and need for specificity.

The BeWell has been developed in work packages targeting different dimensions of the project ambitions and goals. Of significance to the competence matrix development the work undertaken in WP2 with the observatory and the scoping reviews of relevant skills and competences, and WP3 targeting skills strategies, have served as input to the matrix construction. This has partly been towards the general digital matrix, but more directly concerning the elaboration of specific submatrices linked to the different training programmes developed in WP5 as described below and in attachment.

In addition to input from, WP2, WP3 and WP5 of the BeWell project, partner and stakeholders initiatives together with desk research and experience from related

settings has been taken into consideration. One recent source appearing after WP input was delivered was the Italian EU-supported [*Strategia Generale di Accrescimento delle Competenze Digitali*](#) (Digital skills to increase quality and resilience of the health System in Italy) - REFORM/SC2022/047 (2023-10-25).

The central background reference for the general matrix development has been the European Commission's DigComp Framework: Vuorikari, R., Kluzer, S. and Punie, Y., DigComp 2.2: The Digital Competence Framework for Citizens – With new examples of knowledge, skills and attitudes, EUR 31006 EN, Publications Office of the European Union, Luxembourg, 2022, ISBN 978-92-76-48883-5, doi:10.2760/490274, JRC128415 (2022-03-17). This framework has been targeted towards citizens in general, whereas the BeWell project is directly dedicated to the diversity of healthcare professions. This means that parts of the matrix, where the general citizen perspective is overlapping with core competence requirements in a professional healthcare setting, e.g., digital literacy, the DigComp formulations are used, but where further specifications at learning outcome level have been added.

This general competence matrix serves as an umbrella over the identified and developed digitally oriented training programmes in BeWell. This means that it stretches across several EQF levels, mainly 4-5-6, but where both lower and higher levels may be touched in the competence descriptions. This will also mirror the work realities in the health sector, and where, especially from post-Covid experience, work tasks representing different levels are part of an integrated approach to solve a diversity of healthcare needs, challenges and practical handling. In this sense, the developed competence matrix should not be mixed up with a qualification matrix which is more strictly levelled according to national and/or international regulations of healthcare staff functions.

For in-depth competence descriptions under the DigComp umbrella specific parts are added to this general BeWell digital matrix. Where the direct thematic approach in the WP5 training programmes, microcredentials and MOOCs are addressed, specific separate submatrices are defined, as included in the annexes. These submatrices will be tagged according to ESCO-specifications.

[ESCO](#) is the multilingual classification of European Skills, Competences, Qualifications and Occupations. It identifies and categorises skills, competences, qualifications and occupations relevant for the EU labour market and education and training.

The ESCO skills pillar distinguishes between i) skill/competence concepts and ii) knowledge concepts by indicating the skill type. There is however no distinction between skills and competences. Each of these concepts comes with one preferred term and a number of non-preferred terms in each of the 28 ESCO languages.

ESCO applies the same definition of "competence" as the European Qualification Framework. According to this "competence means the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development." When seen together the main matrix below and the corresponding submatrices will constitute a broad approach towards description and definition of digital competences in the healthcare sector.

Training programmes/MOOCs⁵ will be defined as microcredentials, meaning smaller training provisions/courses directly addressing workplace requirements. They should be stackable and building towards bigger entities, potentially as components in full qualification cycles. They may also be verified in multilingual versions and issued digitally as fake-proof portable documents according to the EDCI-standard.

⁵ Massive open online courses

Assessment and validation criteria

The qualification matrices in this document outline the learning outcomes that are seen as central to the digital competences within the BeWell project. Learning outcomes are as the name suggests, descriptions of what a learner knows. Another important aspect of this, is how one can be sure that the learner actually has apprehended the learning outcomes in question. This is done through different forms of assessment and validation.

In BeWell, we are using a combination of formal assessment and validation of non-formal and informal learning. By formal assessment, we mean that the learners go through the training programmes created, get a certain score on their assessments, and based on the required score, are deemed to have achieved the relevant learning outcomes. As you can see from the table below, each of the training courses have a set score that the students need to achieve to pass. If they pass, they have achieved the learning outcomes in the corresponding sub-matrix.

Training programme	Score	Sub matrix
Increase Office and/or Google suite knowledge: BeWell-TD01	Score of 50 % or higher	U1.1 – Office and/or Google suite knowledge
Digital tools for problem solving: BeWell-TD02	Score of 50 % or higher	U1.2 – Digital problem solving
Healthcare data protection management (GDPR): BeWell-TD03	Score of 70 % or higher	U1.3 – Healthcare data protection management (GDPR)
Introductory Training Programme on Cybersecurity for Healthcare Staff: BeWell-TD04	Score of 65 % or higher	U1.4 – Cybersecurity for Healthcare Staff
Telemedicine: BeWell-TD05	Score of 50 % or higher	U1.5 – Telemedicine
Telehealth: BeWell-TD06	Score of 50 % or higher	U1.6 – Telehealth
Health care ICT: BeWell-TD07	Score of 50 % or higher	U1.7 – Healthcare ICT
PACS, e-file, RIS: BeWell-TD08	Score of 80 % or higher	U1.8 – PACS, e-file, RIS
Big Data & Analytics: BeWell-TD09	Score of 75 % or higher	U1.9 – Big Data & Analytic
Digital skills for nurses and allied HCP: BeWell-TD10	Score of 90 % or higher	U1.10 – Digital skills for nurses and allied HCP

There is another way to go, which is through validation of non-formal and informal learning. Validation of skills gained through non-formal and informal learning is seen as increasingly important in Europe. It is now being recognized as a crucial part of skills policies and initiatives such as the European Skills Agenda, the European Area of Education, the reinforced Youth Guarantee, and the European Social Pillar Action Plan. Validation helps individuals to continue learning throughout their lives and across different institutions, industries, and countries. The need for upskilling and

reskilling is also being recognized, with a growing emphasis on investing in skill development⁶.

As outlined in the European guidelines for validating non-formal and informal learning, this is a process where the individual has to be in the centre, and there can be no one-size-fits all. However, a set of guidelines, based on the work of Cedefop and adapted to the BeWell reality is one deliverable in this project. One aspect of this has already been integrated into the training programmes, with the self-assessment questions. They allow for the learners to check if they need to go through all of the material, or if they can skip directly to the assessment. With the VNIL guidelines, the learners will also have the opportunity to have an external assessor validate their learning without having to go through the formal assessment.

Digital competence matrix and training programme specific submatrices

This section will outline the purpose of the sub-matrices and the link to the main matrix. The main matrix covers the general learning outcomes for digital competence. However, the matrix would be too complicated if it should contain all of the learning outcomes that are present in our nine training programmes. We have therefore created nine specific sub-matrices, one for each training programme. The list of the programmes can be found below, and each of the sub-matrices are added after the main matrix in this document.

In order to give a better understanding of the link between the main matrix and the sub-matrices, there is a training module link attached to the learning outcomes. It shows where in the training programmes that learning outcome can be found. While each sub-matrix will only have codes relating to their programme, the main matrix has codes from all of the training programmes. This is because the main matrix is much more general and will have learning outcomes that cover a broader theme than the sub-matrices. The explanation of the code is:

- TD01 = Training programme Digital competence number 1
- M1 = Module 1 of that training programme
- M1/M2 = Present in both module 1 and 2
- M1-M5 = Present in module 1 up to 5

In addition to all of the codes in the matrices, the table below shows the links between the main matrix, the training programmes and the sub-matrices. This means that the learning outcomes in the main matrix units are covered both in the training programmes in the column to the middle, and the sub-matrices in the column to the right.

⁶ Cedefop (2023). European guidelines for validating non-formal and informal learning. Luxembourg: Publications Office. Cedefop reference series; No 124.
<http://dx.doi.org/10.2801/389827>

Main matrix units	Training programme modules	Sub-matrices
U1 Information and data literacy	- PACS, e-file, RIS: BeWell-TD08, Modules 1-12 - Digital skills for nurses and allied HCP: BeWell-TD10, Module 1	- U1.8 – PACS, e-file, RIS - U1.10 – Digital skills for nurses and allied HCP
U2 Digital teambuilding and communication	- Increase Office and/or Google suite knowledge: BeWell-TD01, Modules 5 and 6 - Telemedicine: BeWell-TD05, Modules 1-6 - PACS, e-file, RIS: BeWell-TD08, Module 12 - Digital skills for nurses and allied HCP: BeWell-TD10, Module 1	- U1.1 – Office and/or Google suite knowledge - U1.5 – Telemedicine - U1.8 – PACS, e-file, RIS - U1.10 – Digital skills for nurses and allied HCP
U3 Digital tools, content creation and copyright	- Increase Office and/or Google suite knowledge: BeWell-TD01, Modules 1-4 - Telehealth: BeWell-TD06, Module 2 - Digital skills for nurses and allied HCP: BeWell-TD10, Module 1	- U1.1 – Office and/or Google suite knowledge - U1.6 – Telehealth - U1.10 – Digital skills for nurses and allied HCP
U4 Safety and cybersecurity	- Healthcare data protection management (GDPR): BeWell-TD03. Modules 1-8 - Introductory Training Programme on Cybersecurity for Healthcare Staff: BeWell-TD04, Modules 1-5 - Telemedicine: BeWell-TD05. Modules 1-6 - Telehealth: BeWell-TD06, Modules 1 and 3	- U1.3 – Healthcare data protection management (GDPR) - U1.4 – Cybersecurity for Healthcare Staff - U1.5 – Telemedicine - U1.6 – Telehealth
U5 Digital problem solving	- Digital tools for problem solving: BeWell-TD02, Modules 1-5 - Telemedicine: BeWell-TD05. Modules 1-6 - Health care ICT: BeWell-TD07, Modules 1-5 - Big Data & Analytics: BeWell-TD09, Modules 1-12 - Digital skills for nurses and allied HCP: BeWell-TD10, Module 1	- U1.2 – Digital problem solving - U1.5 – Telemedicine - U1.7 – Healthcare ICT - U1.9 – Big Data & Analytics - U1.10 – Digital skills for nurses and allied HCP

Digital-oriented training programmes/microcredentials in BeWell:

1. Increase Office and/or Google suite knowledge: BeWell-TD01
2. Digital tools for problem solving: BeWell-TD02
3. Healthcare data protection management (GDPR): BeWell-TD03
4. Introductory Training Programme on Cybersecurity for Healthcare Staff:
BeWell-TD04
5. Telemedicine: BeWell-TD05
6. Telehealth: BeWell-TD06
7. Health care ICT: BeWell-TD07
8. PACS, e-file, RIS: BeWell-TD08
9. Big Data & Analytics: BeWell-TD09
10. Digital skills for nurses and allied HCP: BeWell-TD10