

Alignment Assessment of Intel's Skills for Innovation Professional Development Suite to European Competence Frameworks



Stefano Kluzer - All DIGITAL
Marianella Parra - Bantani Education

July 2024

Disclaimer

The opinions and assessments expressed in this document are those of the authors. While the analysis is based on the European Competence Frameworks developed by the European Commission, it does not constitute an endorsement of the contents. The European Commission cannot be held responsible for any use which may be made of the information contained within this document.

© AllDigital 2024

© Bantani Education 2024

Authors: Stefano Kluzer and Marianella Parra

Reviewers: Afonso Araújo, Hazel Israel, Sandra Troia.

This document is an open-access resource. This means you are free to access, use and disseminate it with appropriate credit to All Digital and Bantani Education.

You may cite this document as follows: Kluzer, S. & Parra, M., 2024 Alignment Assessment of Intel's Skills for Innovation Professional Development Suite to European Competence Frameworks. All Digital and Bantani Education

This work is licensed under a [Creative Commons Attribution NonCommercial-NoDerivatives 4.0 International License](https://creativecommons.org/licenses/by-nd/4.0/). You may not modify or translate this publication without AllDigital, Bantani Education or the author's permission.

For any questions, please contact info@bantani.com.

Content

Why The European Competence Frameworks?	4
Summary of Results.....	5
Assessment Methodology	7
For DigComp and DigCompEdu	8
For EntreComp and EntreCompEdu	9
About Competence Proficiency levels and Stages of development found in SFI PD Suite	11
Competence Matching	12
Matching with DigComp Framework	12
Matching with DigCompEdu Framework.....	13
Matching with EntreComp Framework.....	14
Matching with EntreCompEdu Framework	15
Support and Benefits for Educators and Students.....	17
For Educators	17
For Students.....	18
About the authors and supporting organisations.....	20
References	22
Annex 1.....	23
The full list of competences considered for this assessment	23

Why The European Competence Frameworks?

Competence learning is crucial in today's rapidly evolving world as it equips individuals with the skills, attitudes, and abilities needed to navigate complex and dynamic environments. In an era where technology, globalisation, and changing job markets continuously reshape the landscape, focusing on competence development ensures that learners are prepared for real-world challenges. By prioritising competences, education becomes more relevant, practical, and impactful, empowering learners to thrive in diverse and unpredictable contexts.

The Council of the European Union adopted a [Recommendation on key competences for lifelong learning on 22 May 2018](#) (an update of a similar [Recommendation of 2006](#)).

“Key competences are those which all individuals need for personal fulfilment and development, employability, social inclusion, sustainable lifestyle, successful life in peaceful societies, health-conscious life management and active citizenship. They are developed in a lifelong learning perspective, from early childhood throughout adult life, and through formal, non-formal and informal learning in all contexts, including family, school, workplace, neighbourhood and other communities.” (Council Recommendation, OJ C 189, 4.6.2018, p.7)

The eight European Key Competences for Lifelong Learning are:

1. Literacy competence
2. Multilingual competence
3. Mathematical competence and competence in science, technology and engineering
4. Digital competence
5. Personal, social, and learning to learn competence
6. Citizenship competence
7. Entrepreneurship competence
8. Cultural awareness and expression competence

According to the 2018 Council Recommendation:

“**Digital competence** involves the confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society. It includes information and data literacy, communication and collaboration, media literacy, digital content creation (including programming), safety (including digital well-being and competences related to cybersecurity), intellectual property-related questions, problem-solving, and critical thinking”. (OJ C 189, 4.6.2018, p.9)

“**Entrepreneurship competence** refers to the capacity to act upon opportunities and ideas, and to transform them into values for others. It is founded upon creativity, critical thinking and problem-solving, taking initiative and perseverance and the ability to work collaboratively in order to plan and manage projects that are of cultural, social or financial value”. (OJ C 189, 4.6.2018, p.11)

To facilitate lifelong learning policies and practice for key competences at European, national, and local levels, the European Commission supported the development of reference competence frameworks. These frameworks identify and describe the main

areas and specific competences of each key competence (and related competences such as those of educators working on them), their articulation at different proficiency levels, and other aspects.

Some of the key competences and related frameworks developed so far by the Joint Research Centre of the European Commission and through European-funded projects are:

[DigComp](#) (2013). The European digital competence framework for all citizens. The latest [DigComp 2.2](#) version was published in 2022.

[EntreComp](#) (2016). The European framework for entrepreneurship.

[DigCompEdu](#) (2017). The European framework for the digital competence of educators.

[LifeComp](#) (2020). The European framework for the personal, social, and learning to learn competence.

[GreenComp](#) (2022) The European sustainability competence framework.

[EntreCompEdu](#) (2024) The educators' professional competence framework for entrepreneurial learning (developed with co-funding by the Erasmus+ Programme of the European Union).

Other key competence frameworks were created by the Council of Europe (e.g. the [Common European Framework for Languages](#), 2001).

Summary of Results

Intel's **Skills for Innovation Professional Development Suite** (henceforth SFI PD Suite) has been assessed for its alignment with the following **four European key competence frameworks**:

- **DigCompEdu**: The European Framework for the Digital Competence of Educators
- **DigComp**: The Digital Competence Framework for Citizens
- **EntreCompEdu**: The Educators' Professional Competence Framework for Entrepreneurial Learning
- **EntreComp**: The Entrepreneurship Competence Framework

The assessment was performed by ALL DIGITAL's and Bantani Education's experts in the context of the DigComp Hub project, which is currently running the DigComp community of practice and other activities.

Based on the assessment results, ALL DIGITAL and Bantani Education confirm that the **SFI PD Suite demonstrates a very high alignment with the DigComp and DigCompEdu, and the EntreComp and EntreCompEdu European competence frameworks**. This high degree of correspondence indicates that it can significantly contribute to the professional development of educators by enhancing their digital and entrepreneurial competences. Consequently, educators will be better equipped to foster digital skills and cultivate an entrepreneurial mindset among learners, by creating tech-infused learning experiences that prepare learners for the future.

The tables shown in the Competence Matching section below indicate that **almost all the SFI PD Suite's courses address all competence areas of the four frameworks and nearly all specific competences**, with varying degrees of intensity.

- About Digital Competences

All specific digital competences of the DigComp Framework except three (see below) are developed by the SFI PD modules and courses to enable educators to innovate their teaching practice and contribute to their learners' digital competence development. Some specific DigComp competences are addressed more frequently, such as: *1.3 Managing data, information and digital content*; *2.1 Interacting* and *2.4 Collaborating through digital technologies*, *3.1 Developing* and *3.2 Integrating and re-elaborating digital content*, and *3.4 Programming*; *5.2 Identifying needs and technological responses* and *5.3 Creatively using digital technologies*.

Matchings for DigComp competences *4.4 Protecting the environment* and *2.6 Managing digital identity* were not found in the SFI PD Suite but they are addressed by several supplementary Starter Packs for educators. On the other hand, no correspondence was found for competence *3.3. Copyright and licences*, but as said later, this might be due to the assessment's methodological shortcomings.

With respect to DigCompEdu, the SFI PD Suite fosters with varying intensity the development of all the Framework's competences. Also in this case, some specific competences are addressed systematically, such as: *1.3 Reflective practice* (on digital education) is encouraged in most lessons of Intel's courses, *2.1 Selecting digital resources*, *3.1 Teaching*, especially *3.3 Collaborative learning* and *5.3 Actively engaging learners*.

From a different angle, only in the course and courselets called From Waterfall to Agile Mindset digital solutions and related competences are not directly addressed.

- About Entrepreneurial Competences

A key feature of the SFI PD Suite is its emphasis on the *3.5 Learning through Experience* competence from EntreComp, present in almost every module and courselet, promoting reflective and experiential learning. The course also provides numerous opportunities for educators to develop *1.2 Creativity* through solving challenges and emphasises, *1.3 Vision*, enabling teachers to shape their futures and inspire their students. Additionally, the competence of *1.4 Valuing Ideas* and *2.1 Self-Awareness and Self-Efficacy* are strongly integrated. *2.4 Financial and Economic Literacy* is barely present, along with *3.1 Taking the Initiative*, although this last competence could be highly developed when taking into practice the new knowledge.

EntreCompEdu competences related to Teaching and Training are consistently addressed. Because this framework is very much focused specifically on entrepreneurial competences It was expected to find just a few EntreCompEdu competences in Level 1, and *1.2 Valuing Entrepreneurial Education* for all was only found once. Also *1.1 Knowing Entrepreneurial Education* was hardly present, however it is expected as it is not one of the main objectives of SFI PD Suite. However, since this framework aims to transform pedagogy into entrepreneurial teaching, its competences are highly present in many courselets. This strong alignment is due to the framework's emphasis on inviting educators to innovate in their practice, which closely mirrors the principles of entrepreneurial learning.

Assessment Methodology

When an educational offering, such as in this case, is not initially designed with direct reference to one or more European competence frameworks, assessing its alignment with these frameworks involves examining its objectives and content and identifying correlations. This process often requires interpretation from both perspectives of the comparison. This is particularly pertinent for frameworks like DigComp and DigCompEdu, which intentionally utilise broad, technology-neutral descriptors and minimise references to specific digital tools and services. Similarly, for EntreComp and EntreCompEdu, which focus more on entrepreneurial and life skills, interpretation is also a critical consideration. Thus, thorough assessment and mapping of competences against these frameworks are essential steps in evaluating alignment and ensuring educational effectiveness.

The assessment of the SFI PD Suite focused on two main resources:

1. the [SFI PD Syllabus](#)
2. the [SFI PD learning platform](#), in particular, the Overview, Learning goals, and “Technology introduced ...” for each of the four Levels’ modules and courselets (38 in total) and their tables of content, some content and activities proposed.

Due to time-given constraints (the overall estimated study time of the SFI PD Suite is about 80 hours), the analysts focused selectively on specific lesson content during the assessment. Similarly, the Starter Packs, supplementary resources of the SFI PD Suite (providing an Educator Guide for each activity), were analysed mainly based on their catalogue descriptions. Despite these time challenges, sufficient materials were examined to conduct a comprehensive assessment and map the competences effectively. For example, in some cases, the short descriptions and main objectives were sufficient to identify the competences addressed. In other cases, a more detailed review of content and activities was necessary, successfully identifying potential for higher development of specific competences through future teacher practice.

The alignment assessment was performed on all 8 modules and 30 courselets using a distinct ‘mapping sheet’ for each of the four competence frameworks, but all with a similar structure: 38 rows for the modules and courselets across the four levels and the needed number of columns according to the competences from each of the frameworks. The results of this mapping exercise are summarised in the four tables presented in the Competence Matching section below.

Given the potential for diverse interpretations of the elements under examination, the alignment assessment was conducted by pairs of experts in two rounds. DigComp and DigCompEdu were addressed by experts from ALL DIGITAL, and EntreComp and EntreCompEdu by experts from Bantani Education. Initially, one framework analyst completed the mapping sheet, followed by a ‘second opinion’ or approval by the reviewer. This collaborative approach led to joint discussions in cases of doubts or unclear results, ultimately leading to a consensus. This thorough, multi-step process ensured a comprehensive and accurate assessment.

For DigComp and DigCompEdu

The analyst looked at content referring to the use of digital solutions and related digital competence aspects, as described in the frameworks, especially the updated list of knowledge, skills, and attitudes examples in DigComp 2.2.

- When a reference or correspondence to one or more specific competences was found in a module or courselet, the analyst marked in the related column/s of the mapping sheet the corresponding proficiency level code based on the respective scales: F=foundation, I=intermediate, A=advanced, H=highly specialised, for DigComp
- A1, A2, B1, B2, C1, C2, for DigCompEdu

Below, we illustrate the proficiency levels identified by the [DigCompEdu report](#) and the [DigComp 2.2 report](#).

DigComp proficiency levels

4 OVERALL LEVELS	Foundation		Intermediate		Advanced		Highly specialised	
8 GRANULAR LEVELS	1	2	3	4	5	6	7	8
COMPLEXITY OF TASKS	Simple task	Simple task	Well-defined and routine tasks, and straightforward problems	Tasks, and well-defined and non-routine problems	Different tasks and problems	Most appropriate tasks	Resolve complex problems with limited solutions	Resolve complex problems with many interacting factors
AUTONOMY	With guidance	Autonomy and with guidance when needed	On my own	Independent and according to my needs	Guiding others	Able to adapt to others in a complex context	Integrate to contribute to the professional practice and to guide others	Propose new ideas and processes to the field
COGNITIVE DOMAIN	Remembering	Remembering	Understanding	Understanding	Applying	Evaluating	Creating	Creating

DigCompEdu proficiency levels

- **Newcomers (A1)** have had very little contact with digital tools and need guidance to expand their repertoire.
- **Explorers (A2)** have started using digital tools without, however, following a comprehensive or consistent approach. Explorers need insight and inspiration to expand their competences.
- **Integrators (B1)** use and experiment with digital tools for a range of purposes, trying to understand which digital strategies work best in which contexts.
- **Experts (B2)** use a range of digital tools confidently, creatively and critically to enhance their professional activities. They continuously expand their repertoire of practices.
- **Leaders (C1)** rely on a broad repertoire of flexible, comprehensive and effective digital strategies. They are a source of inspiration for others.
- **Pioneers (C2)** question the adequacy of contemporary digital and pedagogical practices, of which they are experts. They lead innovation and are a role model for younger teachers.

For EntreComp and EntreCompEdu

The analyst reviewed the content of all modules and courselets with the aim of finding evidence, either in the knowledge-based content or in the more practical and reflective activities, of not only the presence of a given entrepreneurial or teacher-focused competence, but also the potential for higher levels of development during future application in teaching practice.

For EntreComp competences, when the development, enhancement, or evident presence of a competence was found within a module or courselet, it was marked with an X in the corresponding column. A short comment was also added, with an example explaining how that competence is being developed through the specific content. Although EntreComp includes progression levels, these were not specified in the mapping sheet. This is because, for entrepreneurial competences in particular, levels are more closely linked to the degree or depth with which a given competence is demonstrated in a particular action.

For EntreCompEdu competences, a very similar approach was used, but in this case, proficiency levels were identified, based both on content designed by educators to go through and the skills it provides for teachers to develop different strategies through their practice. The proficiency levels for this framework are considered Stages of development:

- Engaging (ENG), Deepening (D) Expansive (Exp)

Since the 8 modules in the SFI PD Suite's Level 1 are mainly about basic digital competences for teachers, a general comment was provided per module. In the case of the courselets in the other three Levels, individual comments per competence were shared.

Below we illustrate the EntreComp Progression Model by [EntreComp: The Entrepreneurship Competence Framework](#) and the Stages of Development expressed in the [EntreCompEdu Framework](#)

EntreComp Proficiency Levels

Foundation		Intermediate		Advanced		Expert	
Relying on support ⁶ from others		Building independence		Taking responsibility		Driving transformation, innovation and growth	
Under direct supervision.	With reduced support from others, some autonomy and together with my peers.	On my own and together with my peers.	Taking and sharing some responsibilities.	With some guidance and together with others.	Taking responsibility for making decisions and working with others.	Taking responsibility for contributing to complex developments in a specific field.	Contributing substantially to the development of a specific field.
Discover	Explore	Experiment	Dare	Improve	Reinforce	Expand	Transform
Level 1 focuses mainly on discovering your qualities, potential, interests and wishes. It also focuses on recognising different types of problems and needs that can be solved creatively, and on developing individual skills and attitudes.	Level 2 focuses on exploring different approaches to problems, concentrating on diversity and developing social skills and attitudes.	Level 3 focuses on critical thinking and on experimenting with creating value, for instance through practical entrepreneurial experiences.	Level 4 focuses on turning ideas into action in 'real life' and on taking responsibility for this.	Level 5 focuses on improving your skills for turning ideas into action, taking increasing responsibility for creating value, and developing knowledge about entrepreneurship.	Level 6 focuses on working with others, using the knowledge you have to generate value, dealing with increasingly complex challenges.	Level 7 focuses on the competences needed to deal with complex challenges, handling a constantly changing environment where the degree of uncertainty is high.	Level 8 focuses on emerging challenges by developing new knowledge, through research and development and innovation capabilities to achieve excellence and transform the ways things are done.

EntreCompEdu Stages of Development

	Engaging	Deepening	Expansive
Entrepreneurial Knowledge & Understanding	has a basic knowledge of entrepreneurial learning and recognises its potential in the subject and value to students.	is developing a broader knowledge of entrepreneurial learning and its potential across and beyond the curriculum.	has extensive, in-depth knowledge of how students develop entrepreneurial competences in a wide range of contexts in everyday life.
Planning & organising creative learning environments	plans appropriate entrepreneurial learning objectives and organises the basic use of resources to support entrepreneurial learning within the subject.	fully integrates entrepreneurial competences in my planning, making connections across and beyond the curriculum where appropriate.	planning has a transformative purpose so that students fully engage with and lead value-creating projects, using resources in an ethical and sustainable way.
Teaching and Training	mainly uses traditional teaching strategies (e.g. textbook exercises or telling students what to do), that transmits subject knowledge and focuses on basic skills.	Is developing and trailing more flexible and creative teaching strategies, so that students are beginning to debate issues and ask and follow their own enquiries.	uses a rich range of teaching and learning methods, chosen to fit the context and ensure that students have autonomy to apply their learning to the real-world.
Assessment	monitors and reports on student progress, mainly through tests designed to check what they are learning. Marks students' work, but feedback is not always specific to entrepreneurial competences.	uses a range of strategies to support assessment for entrepreneurial learning and aligns assessment to the learning objectives and content.	assessment practices empower students to monitor and critically reflect on their own progress, achievements and next steps.
Professional Learning and Development	knows which areas of entrepreneurial competence are needed to develop and is willing to engage in professional learning opportunities that arise. However, rarely talks about research or evidence in entrepreneurial education. While describing professional learnings to others, do not necessarily evaluate its impact.	consistently reflects on and evaluates practice and can explain how it is informed by a range of evidence. Is open to considering entrepreneurial ideas and strategies. Actively seeks out professional learning and development opportunities in entrepreneurial education. Research sometimes features in conversations.	actively seeks out what works well in entrepreneurial education and engages critically with the findings. While keeping an open mind, is confident and capable of challenging what people say about entrepreneurial education. Practice is research-informed and evidence-based. Is proactive in reaching out to others within the entrepreneurial education field.

About Competence Proficiency levels and Stages of development found in SFI PD Suite

Based on the analysis of the SFI DP Suite's goals and training approach (e.g. its multilayered learning content encouraging a deeper exploration of topics, and the frequent action and interaction requests to learners), we concluded that, in the vast majority of cases, the Suite may contribute to develop competences at DigCompEdu B1-B2 level and DigComp Intermediate to Advanced level. A distinguishing feature of the DigComp Advanced proficiency level is the capability of "Guiding others" in the use of digital tools, and this is undoubtedly a goal set for the learners of the SFI PD Suite. Educators who have the possibility and interest to fully explore the learning opportunities suggested by the Suite, and/or to practice in their educational activity what they have learned may of course move on to more advanced DigCompEdu and DigComp proficiency levels.

Even though Intel's SFI PD Suite primarily aims to empower educators by equipping them with the necessary skills to adapt technology to the learning environment and create technology-infused learning experiences, its development shows a very high alignment with EntreComp and EntreCompEdu. Regarding the 15 entrepreneurial competences, specific levels have not been identified (for reasons explained above), but it is accurate to state that most competences are likely developed at Foundation and Intermediate levels simply by engaging with the content and completing the proposed activities. However, it is ultimately up to the educator to progress to an Advanced and even Expert level by applying the knowledge and skills acquired through practice, research, and the challenges they may encounter.

For EntreCompEdu, the assessment shows that most identified competences would be developed at the Engaging and Deepening stages of development, with evidence of the Expansion stage found in only a few courselets. It is important to note that EntreCompEdu competences are clearly defined by knowledge, values, teaching-related issues, assessment, and professional development in entrepreneurial competences and learning specifically. However, the design of the SFI Professional Development learning experience shows significant potential for implicit entrepreneurial learning development through its explicit technology-based content.

Competence Matching

The tables below illustrate the results of the alignment assessment for the four selected European competence frameworks. These tables summarise at the course level a more comprehensive and detailed mapping work performed at module or courselet level (explained in the Assessment Methodology section). When at least one competence matching was found in any of the modules or courselets belonging to a course, the cell corresponding to the given competence is highlighted in grey in the respective course row.

Results are presented for the 8 modules of SFI PD Level 1 (combined) and the 10 courses of the other three levels.

- Reading the table horizontally shows which competences of the given framework are addressed by each SFI PD course.
- Reading the table vertically tells how many SFI PD courses address each competence of the given framework.

Matching with DigComp Framework

SFI PD Modules and Courses	DigComp Framework areas and specific competence numbers																				
	1. Information			2. Communication and collaboration						3. Digital content				4. Safety				5. Problem solving			
	1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	2.6	3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4	5.1	5.2	5.3	5.4
1. Adapter of Technology																					
All modules																					
2. Leader of Learning Experiences																					
Introduction to Learning Remotely																					
Establishing Effective Educator-Machine Partnerships																					
Fostering Student Engagement in the Age of Digital Distraction																					
Strengthening Real-World Relevance in the Classroom																					
3. Catalyst of Creative Confidence																					
Analytical Thinking Through Data																					
Critical Reasoning to Make Better Decisions																					
Bridging the Creativity Gap																					
4. Mentor of Upgraded Mindsets																					
From Waterfall to Agile Mindset																					
From Operational to Strategic Thinking																					
From Follower to Entrepreneurial Mindset																					

Most of the specific digital competences of the DigComp Framework are developed by the SFI PD modules and courses to enable educators to innovate their teaching practice and contribute to their learners' digital competence development. In particular, the following DigComp competences are addressed more frequently:

- Area **1 Information and data literacy**, especially **1.3 Managing data, information and digital content** that includes data collection, analysis, and visualisation. Level 2 courses in particular address in depth many aspects of these competences
- **2.1 Interacting through digital technologies** (including AI-based systems) and **2.4 Collaborating through digital technologies** which is essential to support collaborative learning, an approach much favoured by the SFI PD Suite

- **3.1 Developing and 3.2 Integrating and re-elaborating digital content**, including in a 'makers' perspective, and **3.4 Programming**. These competences are key to many educational activities aimed at stimulating creativity and engaging learners
- **5.2 Identifying needs and technological responses** is a competence developed through most SFI PD courses which are ultimately about the need to innovate education in all disciplines and learn about the digital opportunities supporting this goal. **5.3 Creatively using digital technologies** to enhance and transform educational activities is again a key competence fostered by the SFI PD Suite.

DigComp Area 4 Safety competences are addressed less frequently in the SFI PD courses, especially competence **4.4 Protecting the environment**. However, the analysis of the 120 SFI Starter Packs available in July 2024 showed that at least 22 concerned green technologies and activities related to environmental protection. Also, 5 Starter Packs address aspects of competence **4.3 Protecting health and well-being** such as cyberbullying, digital support for people with disabilities, and cyberaddiction. While no reference was found in SFI PD courses to competence **2.6 Managing digital identity**, Starter Pack n. 12 'Mining words' for Middle School focuses on the digital footprint aspect of this competence.

The only missing matching across the full set of SFI resources seems to concern DigComp competence **3.3 Copyright and licences**. However, considering the importance of digital content creation and re-elaboration and the large number of educational activities focusing on it in the SFI initiative, it is highly likely that issues related to IPR, licensing conditions, the use of open educational resources, and other aspects of competence 3.3 are indeed addressed by some of the courses materials (e.g. the videos), without showing up in the course descriptions and overviews, lesson titles, and the other content examined by the analysts for this assessment.

Matching with DigCompEdu Framework

SFI PD Modules and Courses	DigCompEdu Framework areas and specific competence numbers																					
	1. Professional engagement				2. Digital resources			3. Teaching and learning				4. Assessment			5. Empowering learners			6. Facilitating learners' digital competence				
	1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	6.5
1. Adapter of Technology																						
All modules																						
2. Leader of Learning Experience																						
Introduction to Learning Remotely																						
Establishing Effective Educator-Machine Partnerships																						
Fostering Student Engagement in the Age of Digital Distraction																						
Strengthening Real-World Relevance in the Classroom																						
3. Catalyst of Creative Confidence																						
Analytical Thinking Through Data																						
Critical Reasoning to Make Better Decisions																						
Bridging the Creativity Gap																						
4. Mentor of Upgraded Mindsets																						
From Waterfall to Agile Mindset																						
From Operational to Strategic Thinking																						
From Follower to Entrepreneurial Mindset																						

In the case of DigCompEdu, the SFI PD Suite fosters with varying intensity the development of all the Framework's competences. The following ones are addressed systematically by the Suite's modules and courses:

- **1.3 Reflective practice** (on digital education) is encouraged in most lessons of Intel's courses, and **1.4 Continuous professional development** (with digital technology support) is what happens by following this very course online
- **2.1 Selecting digital resources** is a capability developed in many lessons by presenting alternative technical solutions and highlighting choice criteria, their pros and cons etc.
- **3.1 Teaching** (i.e. planning and implementing the use of digital technologies in the different stages of the learning process), and the exploitation of digital opportunities in particular for **3.3 Collaborative learning** and **5.3 Actively engaging learners** are at the heart of the SFI PD Suite approach.
- finally, developing the educators' capacity in **Area 6 Facilitating learners' digital competence** is perfectly aligned with SFI's proposed strategy to integrate technology activities into the existing curriculum to build the mindsets and skillsets (including various aspects of digital competence) to empower students to be innovators.

Matching with EntreComp Framework

SFI PD Modules /Courses	EntreComp Framework areas and specific competence numbers														
	Ideas and Opportunities					Resources					Into Action				
	1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	3.4	3.5
1. Adapter of Technology															
All Modules															
2. Leader of Learning Experiences															
Introduction to Learning Remotely															
Establishing Effective Educator-Machine Partnerships															
Fostering Student Engagement in the Age of Digital Distraction															
Strengthening Real-World Relevance in the Classroom															
3. Catalyst of Creative Confidence															
Analytical Thinking Through Data															
Critical Reasoning to Make Better Decisions															
Bridging the Creativity Gap															
4. Mentor of Upgraded Mindsets															
From Waterfall to Agile Mindset															
From Operational to Strategic Thinking															
From Follower to Entrepreneurial Mindset															

SFI PD Suite demonstrates a high alignment with the EntreComp framework, making it an exceptional course for empowering educators with technology-related skills while developing an entrepreneurial mindset. In particular, the following EntreComp competences are addressed more frequently:

Ideas and Opportunities: the area scoring the highest numbers in terms of evidence showing the development of these competences:

- **1.4 Valuing Ideas** is consistently present throughout levels 1, 2 and 4, encouraging educators to make the most of the ideas and opportunities presented and inviting to recognise the potential value in new technology approaches.
- **1.2 Creativity**, being explicitly present in almost all courses encourages educators to come up with better and more innovative solutions to existing and new challenges.
- **1.3 Vision**, a competence that allows educators to foresee their own future and to be able to work purposefully toward it, is also easily found in many modules and courses.

Resources: an area less represented in the SFI PD Suite but with a competence in particular that is meaningfully developed particularly in all modules but also in many courses:

- **2.1 Self-awareness and self-efficacy** because while learning new skills and reflecting about it, educators become more aware of what they are capable of and even more importantly, become equipped with the skills necessary to facilitate the development of this particularly important competence in their students.

Into Action: an area where most competences are equally present in courses, except for the top entrepreneurial competence found in this alignment assessment:

- **3.5 Learning through experience** because it allows plenty of opportunities to learn by doing, making sure in many of the activities proposed to learn with others, including peers to reflect from both success and failure while incorporating new technologies learning experiences. Explicitly finding this competence in 27 of the 38 modules and courselets makes this a very reflective learning journey for all educators.

Matching with EntreCompEdu Framework

SFI PD Modules / Courses	EntreCompEdu Framework areas and specific competence numbers																
	Ent. knowledge & understanding			Planning & organising creative learning environ.			Teaching & training					Assessment			Professional learning & development		
	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3	5.1	5.2	5.3
1. Adapter of Technology																	
All modules																	
2. Leader of Learning Experiences																	
Introduction to Learning Remotely																	
Establishing Effective Educator-Machine Partnerships																	
Fostering Student Engagement in the Age of Digital Distraction																	
Strengthening Real-World Relevance in the Classroom																	
3. Catalyst of Creative Confidence																	
Analytical Thinking Through Data																	
Critical Reasoning to Make Better Decisions																	
Bridging the Creativity Gap																	
4. Mentor of Upgraded Mindsets																	
From Waterfall to Agile Mindset																	
From Operational to Strategic Thinking																	
From Follower to Entrepreneurial Mindset																	

Despite the fact that EntreCompEdu competences for teachers are specifically about incorporating entrepreneurial teaching and learning in their daily practice, a lot of them have been undoubtedly identified in many of the courses and modules. Considering that even though the objective of a given courselet is not to develop specifically an entrepreneurial trait, the potential for educators to transform their practice into entrepreneurial teaching is quite high. This is why it is considered that the SFI PD Suite excels particularly in integrating competences related to Teaching and Training, including also some very important entrepreneurial assessment methods.

Teaching and Training:

- **3.1 Teaching to inspire and engage students** because innovation and new technologies are key factors in motivating students. Many of the courses include strategies to engage learners in new learning ventures.
- **3.2 Creating Value for others** because being an entrepreneurial teacher is all about creating value for others and inspiring learners to create value through their own learning. This competence was identified in some of the courses even at a deepening level.
- **3.3 Teaching through real-world contexts** is very much highlighted in most of the modules and courses encouraging relevant, real and challenging situations.

Assessment:

- **4.1 Checking and reporting on students' progress** is a competence that is commonly developed through many of the activities proposed in the courses of Level 2 and also present in Level 3 with a straight correlation with data collection and use not only for assessment purposes but also for data and research-based practice. Many of the courses in Level 2 include entrepreneurial assessment forms and strategies.

Support and Benefits for Educators and Students

Intel's SFI PD Suite is a comprehensive training programme that aligns closely with European competence frameworks and aims to effectively support educators in their professional development journey. By enhancing both digital and entrepreneurial skills, the Suite aims to empower educators to create tech-infused, innovative learning environments that prepare students for the future. Its emphasis on experiential learning, creativity, and critical thinking is key to ensure that educators and their students are well-prepared to meet the challenges of the modern world.

The assessment process involved identifying evidence within the course content, demonstrating that these competences can be developed or enhanced not only during educators' engagement with the training content but also through application in their practice. This dual approach suggests a significant potential for future students to cultivate these identified competences as well. These competences are vital for modern educators, as they enhance the ability to deliver meaningful and relevant educational experiences. The SFI PD Suite's focus on these areas stimulates and supports educators to engage and inspire their students, create impactful learning experiences, and promote a collaborative and supportive learning environment through innovative and student-centred approaches.

Potential benefits can therefore be expected for both educators who engage in this learning journey and for their future students who will benefit from their empowered teachers, when developing the competences identified in this alignment assessment:

For Educators

Enhanced Digital Competence: Educators will develop a better understanding of digital tools and related opportunities, enabling them to integrate these more effectively into their teaching practices. For example, in *Level 1: Adapter of Technology*, educators who are new to technology are supported in building basic digital fluency through a mix of learning experiences. This proficiency will help in designing and delivering tech-infused lessons that are engaging and relevant for modern classrooms.

Entrepreneurial Mindset: Educators would cultivate entrepreneurial skills such as creativity, critical thinking, and innovation. For example, *Level 3: Catalyst of Creative Confidence* challenges educators to reimagine learning experiences using technology, empowering students to become confident innovators. These skills will allow educators to foster a forward-thinking approach in their teaching, encouraging problem-solving and adaptability.

Reflective Practice: Through the Learning through Experience competence, educators will engage in reflective practices, hopefully continuously evaluating and improving their teaching strategies. For example, *Level 2: Leader of Learning Experiences* helps educators transition from being content experts to effectively leading learning experiences, incorporating reflective practices. Reflective practice leads to ongoing professional growth and improved educational outcomes.

Creativity and Vision: Educators will most likely enhance their ability to generate and implement creative technological solutions and develop a clear vision for their professional growth and classroom environment. For example, *Level 3: Catalyst of Creative Confidence* encourages educators to reimagine and innovate their teaching methods, fostering a creative and visionary mindset. This would empower educators to inspire their students and create a dynamic, engaging and innovative learning atmosphere.

Critical Thinking and Valuing Ideas: Educators will likely strengthen their critical thinking skills and learn to value and assess new ideas more effectively. For example, *Level 2: Leader of Learning Experiences* supports educators in transitioning from content experts to leaders who critically assess and implement effective learning experiences. This competence is crucial for making informed decisions and fostering an environment where innovative and technological ideas are encouraged and valued.

Improved Teaching Practices: The course provides strategies for using digital technologies to facilitate collaborative learning, actively engage learners, and assess students' progress effectively. For example, *Level 1: Adapter of Technology* and *Level 2: Leader of Learning Experiences* both emphasise the integration of digital tools and effective teaching strategies. Enhanced teaching practices lead to more effective and engaging lessons, ultimately improving student learning outcomes.

Self-Awareness and Self-Efficacy: Educators are expected to develop a stronger sense of self-awareness and confidence in their teaching abilities. For example, *Level 4: Mentor of Upgraded Mindsets* introduces educators to upgraded mindsets, helping them build self-awareness and confidence to thrive in the 4th Industrial Revolution. This personal growth would translate into more confident and effective teaching, positively impacting student engagement and achievement.

For Students

Enhanced Digital Competence: Students engaged in the technology-infused activities suggested by **all levels the SFI PD Suite** will have many new opportunities and meaningful purposes to know about and learn to use digital technologies and applications not usually found in schools or in their daily digital activities. This augmented learning-through-practice opportunity should significantly enhance their digital competence in data science, programming and coding, artificial intelligence and machine learning and other domains, which is essential for success in the modern, technology-driven world.

Entrepreneurial Skills: Students will develop entrepreneurial competences such as creativity, problem-solving, and critical thinking through engaging and innovative teaching methods. For example, educators from *Level 3: Catalyst of Creative Confidence* will foster entrepreneurial skills, encouraging students to become confident innovators. These skills prepare students for future challenges and opportunities in various career paths.

Active and Collaborative Learning: The integration of digital tools and collaborative learning strategies encourages active participation and teamwork among students. For example, educators trained in *Level 2: **Leader of Learning Experiences*** and *Level 3: **Catalyst of Creative Confidence*** will most probably facilitate active and collaborative learning. This approach fosters a deeper understanding of subjects and improves communication and cooperation skills with the added value of up-to-date collaborative online tools.

Inspiration and Engagement: Innovative and creative teaching methods that include latest tech-tools will inspire and engage students, making learning more enjoyable and meaningful. For example, *Level 3: **Catalyst of Creative Confidence*** and *Level 4: **Mentor of Upgraded Mindsets*** provide educators with strategies to inspire and engage students. Increased engagement leads to higher motivation and better academic performance.

Vision and Future Planning: Students will learn to develop a vision for their future and work towards it purposefully, when guided by their educators' example. For example, *Level 4: **Mentor of Upgraded Mindsets*** equips educators with the tools to instil vision and future planning in students. This competence encourages students to set goals and work strategically towards achieving them, enhancing their personal and professional growth.

Critical Thinking and Valuing Ideas: Through a learning environment that values ideas and fosters critical thinking, students will learn to analyse and assess information effectively with the added value of using innovative technology tools. For example, educators trained in *Level 2: **Leader of Learning Experiences*** and *Level 3: **Catalyst of Creative Confidence*** will hopefully create an environment that fosters critical thinking and idea valuation. These skills are crucial for making informed decisions and succeeding in various aspects of life and career.

Self-Awareness and Confidence: Students will develop self-awareness and confidence in their abilities, when supported by the reflective and empowering teaching methods of their educators. For example, *Level 4: **Mentor of Upgraded Mindsets*** prepares educators to help students build self-awareness and confidence. This personal growth enhances students' ability to tackle challenges and pursue their goals with confidence.

About the authors and supporting organisations

Analysts

Stefano Kluzer - Consultant and researcher at ALL DIGITAL, moderator of the DigComp Community of Practice for the DigComp Hub project, co-author of the DigComp 2.2 report.

Marianella Parra - Teacher and teacher trainer. Consultant and Education and Learning Manager for Bantani Education. With expertise in community engagement development and teaching-learning content and methodologies. Has crafted numerous curriculum development guidelines and educator toolkits embedding competence learning.

Reviewers

Sandra Troia - School teacher in Italy and consultant at ALL DIGITAL. Consultant for the localisation and adaptation to the Italian context of the SHERPA pedagogical toolkit, based on DigCompEdu and SELFIEforTEACHERS.

Hazel Israel - Educator with expertise in assessment and curriculum design particularly relating to skills and competence, co-author of [Scaffold](#) and passionate about creativity, inclusion and learning for twin transitions.

Afonso Araujo - DigComp Hub project manager at ALL DIGITAL.



[ALL DIGITAL](#) is a leading pan-European association based in Brussels, representing member organisations that work to enhance digital skills and competences, and employability of all people, making them aware and capable of using digital tools and online services, to be included in today's society and exploit the opportunities of digital transformation. ALL DIGITAL represents digital education stakeholders, such as digital competence centres, adult education centres, community centres, schools, libraries and their networks across Europe, where young people and adults can access training and support to improve their digital skills and keep up to date with the latest technology developments.

The [DigCompHub project](#), coordinated by ALL DIGITAL, is an Erasmus+ Cooperation partnership to support and engage adult education providers across Europe on the path to digital transformation through the use of the European DigComp Framework. The project further develops and nurtures the [DigComp Community of Practice](#), delivers a short training and mentoring online programme to support adult education providers on the adoption and use of DigComp, and promotes the wide adoption of DigComp across Europe.

BANTANI EDUCATION

[Bantani Education](#), a non-profit in Belgium, is dedicated to transforming learning by embedding entrepreneurial and creative lifelong learning practices. Collaborating with public, community, and private sector partners, Bantani integrates entrepreneurial skills into various learning environments. Their mission is to empower individuals with an understanding of their entrepreneurial potential, driving innovation in policy and practice from early education through to the labour market. Supported by an international team and a broad network of experts, Bantani's work includes policy-making, project development, assessment, and community building; successfully managing [The EntreComp Community](#).

They lead initiatives that address development needs in policy and practice, focusing on innovative teaching, lifelong learning, sustainability, and skills visibility. By driving entrepreneurial learning opportunities, encouraging an entrepreneurial mindset for life, and equipping citizens with adaptable skills for future challenges, Bantani Education stands as a leading organisation in promoting entrepreneurial and creative learning.

References

COUNCIL RECOMMENDATION of 22 May 2018 on **Key competences for lifelong learning**, Official Journal of the European Union OJ C 189, 4.6.2018.

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 978-92-76-48882-8, doi:10.2760/115376, JRC128415.

Punie, Y., editor(s), Redecker, C., **European Framework for the Digital Competence of Educators: DigCompEdu**, EUR 28775 EN, Publications Office of the European Union, Luxembourg, 2017, ISBN 978-92-79-73718-3 (print), 978-92-79-73494-6 (pdf), doi:10.2760/178382 (print), 10.2760/159770 (online), JRC107466.

Bacigalupo M, Kampylis P, Punie Y and Van Den Brande L. **EntreComp: The Entrepreneurship Competence Framework**. EUR 27939 EN. Luxembourg (Luxembourg): Publications Office of the European Union; 2016. JRC101581.

EntreCompEdu (Ed.). (2020). **EntreCompEdu: The Educators' Professional Competence Framework for Entrepreneurial Learning Supporting teachers and trainers to deliver entrepreneurial competences through their teaching**. In www.entrecompedu.eu.

Annex 1

The full list of competences considered for this assessment

DigComp		
Area	number	competence
Information and data literacy	1.1	Browsing, searching & filtering data, information & digital content
	1.2	Evaluating data, information and digital content
	1.3	Managing data, information and digital content
Communication and collaboration	2.1	Interacting through digital technologies
	2.2	Sharing through digital technologies
	2.3	Engaging in citizenship through digital technologies
	2.4	Collaborating through digital technologies
	2.5	Netiquette
	2.6	Managing digital identity
Digital content creation	3.1	Developing digital content
	3.2	Integrating and re-elaborating digital content
	3.3	Copyright and licences
	3.4	Programming
Safety	4.1	Protecting devices
	4.2	Protecting personal data and privacy
	4.3	Protecting health and well-being
	4.4	Protecting the environment
Problem solving	5.1	Solving technical problems
	5.2	Identifying needs and technological responses
	5.3	Creatively using digital technology
	5.4	Identifying digital competence gaps

DigCompEdu		
Area	number	Competence
Professional engagement	1.1	Organisational communication
	1.2	Professional collaboration
	1.3	Reflective practice
	1.4	Digital CPD
Digital resources	2.1	Selecting
	2.2	Creating and modifying
	2.3	Managing protecting, sharing
Teaching and learning	3.1	Teaching
	3.2	Guidance
	3.3	Collaborative learning
	3.4	Self-regulated learning
Assessment	4.1	Assessment strategies
	4.2	Analysing evidence

	4.3	Feedback & planning
Empowering learners	5.1	Accessibility & inclusion
	5.2	Differentiation & personalisation
	5.3	Actively engaging learners
Facilitating learners' digital competence	6.1	Information and media literacy
	6.2	Communication
	6.3	Content creation
	6.4	Responsible use
	6.5	Problem solving

EntreComp		
Area	number	Competence
Ideas and Opportunities	1.1	Spotting Opportunities
	1.2	Creativity
	1.3	Vision
	1.4	Valuing Ideas
	1.5	Ethical & Sustainable Thinking
Resources	2.1	Self-awareness & Self-efficacy
	2.2	Motivation & Perseverance
	2.3	Mobilising Resources
	2.4	Financial & Economic Literacy
	2.5	Mobilising Others
Into Action	3.1	Taking the Initiative
	3.2	Planning & Management
	3.3	Coping with Ambiguity, Uncertainty & Risk
	3.4	Working with Others
	3.5	Learning through Experience

EntreCompEdu		
Area	number	Competence
Entrepreneurial Knowledge and Understanding	1.1	Knowing entrepreneurial education
	1.2	Valuing entrepreneurial education for all
	1.3	Understanding how students develop entrepreneurial competences
Planning & Organising Creative Learning Environments	2.1	Setting entrepreneurial learning objectives that are ethical and sustainable
	2.2	Making connections
	2.3	Creating an empowering entrepreneurial learning environment
Teaching & Training	3.1	Teaching to inspire and engage students
	3.2	Creating value for others
	3.3	Teaching through real-world contexts
	3.4	Encouraging self-awareness and self-confidence to support learning
	3.5	Promoting productive working with others

Assessment	4.1	Checking and reporting on students' progress in entrepreneurial learning
	4.2	Sharing feedback on entrepreneurial learning
	4.3	Celebrating progress and achievement
Professional Learning & Development	5.1	Evaluating impact
	5.2	Research-informed and evidence-based practice
	5.3	Building and sustaining entrepreneurial networks