INTELLECTUAL OUTPUT N. 3

"Recommendations for the inclusion of Entrepreneurship Education in the agricultural sector"

Index

Summary

This Report is the result of a project funded under the Erasmus Plus Program. Views and opinions expressed in this publication are the sole responsibility of the author and do not necessarily reflect the views of the European Commission.

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Introduction

"The best investment in our future is the investment in our people. Skills and education drive Europe's competitiveness and innovation. But Europe is not yet fully ready. I will ensure that we use all the tools and funds at our disposal to redress this balance."

President Von der Leyen, during the presentation of the European Skills Agenda

On 22/05/2018, the Council of Europe adopted a ***new Recommendation on Key Competences for Lifelong Learning***[1] which highlights the value of complexity and sustainable development. There is a growing need for more *entrepreneurial skills*, and for social and civic skills as well, which are considered indispensable *" in order to ensure resilience and ability to adapt to change"* (and there had not yet been the Covid-19 pandemic). *Key competences* should be acquired in formal and informal education environments, firstly at school. Key competences were initially divided into 8 macro-categories:

1- communication in the mother tongue,

2- communication in foreign languages,

3- mathematical competence and basic skills in science and technology,

4- digital competence,

5- "learning to learn" (metacognitive competence),

6- social and civic competences,

7- sense of initiative,

8- cultural awareness and expression.

The European Erasmus Plus project TEEN FARM (https://www.cesarweb.com/teenfarm/), started in October 2018 and coordinated by CESAR[2] with the support of a multi-actor team, carried out a research, experimentation and improvement path concerning the "**sense of initiative**" competence, meant as **entrepreneurial competence**, that is the ability to identify and seize opportunities and to plan and manage creative processes which have a cultural, social, or financial value. More precisely, the TEEN FARM project has tried to understand how to include entrepreneurship education in agricultural training courses, working on a "comparison" at

[1] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604(01)

[2] It is a KA2, Strategic Partnership, made up of different actors from the educational and business landscape: three VET agricultural institutes (ISIS Ciuffelli di Todi - IT, Dalum College of Odense - DK, and Pavlov Institute of Dobrich - BG), the University of Wageningen (NL), the University of Neubrandenburg (DE), the local development association ADRAT in Chaves (PT), and the INIPA training institution of Coldiretti (IT).

European level, where the same European education systems present many "inhomogeneities" (Source: Eurydice Report, 2016).

This Report on the TEEN FARM project, together with the Intellectual Output no. 1 (Pilot Course) and the Intellectual Output n. 2 (Teacher Toolkit for Entrepreneurship Education), aims to**:**

- illustrate and comment on the assessments to which the students of the three agricultural institutes involved have been subjected, trying to understand their level in terms of acquired *skills*[3],
- provide and discuss possible indications about the importance of the inclusion of Entrepreneurship Education in VET, in the agricultural sector (and beyond).

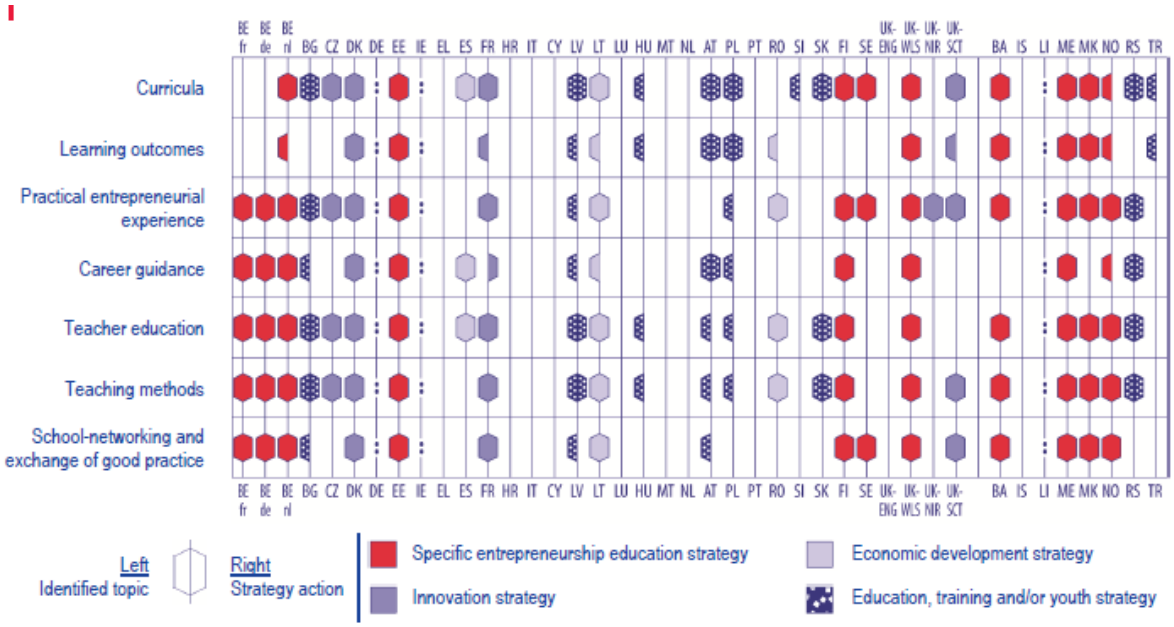
[3] There are three areas for entrepreneurial skill assessment: *attitudes* (self-confidence and sense of initiative); *skills* (creativity, financial literacy, resource management, risk/uncertainty management, teamwork); *competences* (ability to assess opportunities, understanding of the role of entrepreneurs in society, and awareness of career prospects in the entrepreneurial field) (Source: Entrepreneurship education at school in Europe, Eurydice, 2017).

1. Assessment: starting point and methodology

1.1 The starting point

When the Teen Farm project was conceived, its basis was the observation that the levels of ***Entrepreneurship Education (EE)*** in European education systems are hugely different from each other (Figure 1).

Figure 1. Entrepreneurship Education, diversity of strategy and applications in the EU (Source: Eurydice, 2017).



This situation of lack of clarity and unevenness persists still now, in 2021. In February 2021, CEDEFOP (*European Centre for the Development of Vocational Training*) published a tender [4] for the realization of a *Study on entrepreneurial competence teaching in VET training*. The research to be carried out according to this contract will help to better understand how entrepreneurship competence is embedded in VET in Europe, the related challenges and opportunities, and how these vary between countries. The findings of the study will support policy makers, social partners, VET providers and other stakeholders in promoting entrepreneurship competence.

Today the situation is that, in some countries, ***entrepreneurship education*** is based on the adoption of a "Specific Educational Strategy" present in the curricula at all school levels while, in

[4] https://www.cedefop.europa.eu/da/about-cedefop/public-procurement/entrepreneurship-competence-vocational-education-and-training-0

other countries, there isn't any Strategy: at most there are impromptu initiatives and practices conducted by individual schools. The foresight of the TEEN FARM project has been that the countries from which the VET Institutes involved in the project come from represent various levels of entrepreneurship education (Figure 2):

- Italy: *no strategy* (presence of individual initiatives),
- Bulgaria: *general strategy,*
- Denmark: *specific strategy*.

Figure 2. Entrepreneurship education: summary table of differences among EU Member States (Source: Eurydice, 2017).

Scope	Specific comprehensive strategy	Embedded in broader strategies	Single programmes and initiatives
Member State	Belgium, Denmark, Estonia, Finland, Sweden, Wales (UK)	Austria, Bulgaria, Croatia, Cyprus, Denmark, Estonia, France, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Netherlands, Northern Ireland (UK), Poland, Romania, Scotland (UK), Slovakia, Slovenia	Czech Republic, England (UK), Germany, Italy, Malta, Portugal, Spain

This Report has been prepared thanks also to the contributions that emerged during two meetings of an Internal Commission of the project, made up of experts / stakeholders: high school teachers, expert training technicians.

1.2 The assessment test

Entrepreneurship Education, as a key competence, is broad and multifaceted and linked to a whole range of specific, still poorly defined, learning outcomes: bibliography, including the 2016 Eurydice Report *Entrepreneurship Education at School in Europe*[5], shows that entrepreneurship-related learning outcomes are still being developed. However, the TEEN FARM project, also following the advice of the Report *EntreComp into Action: get inspired, make it happen*[6] *("Identify the learning outcomes that suit your activity"*), has identified some Learning Outcomes related to the target of the project activity (Initial Vocational Education and Training, I-VET - EQF level 3-4). An important input that allowed the Teen Farm project to better define these Objectives was also the examination of the careful work of the Ministry of Education and Research, entitled *Syllabus of Entrepreneurship*[7] of March 2018, whose 5 macro - content areas (forms and opportunities of

[5] https://www.indire.it/2018/10/22/sviluppare-lo-spirito-dimprenditorialita-il-punto-sulle-politiche-europee/
5 EACEA/Eurydice, 2016.
[6] ttps://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/entrecomp-action-get-inspired-make-it-happen-user-guide-european-entrepreneurship-competence
[7] https://www.miur.gov.it/-/pubblicato-il-sillabo-per-l-educazione-all-imprenditorialita-nella-scuola-secondaria-

doing business; idea generation, context and social needs; from idea to business: resources and competences; the enterprise in action: compete on the market; economy-oriented citizenship) have been taken as an example and guide. These Learning Objectives have been developed into modules according to the following scheme:

Table 1. Learning Objectives of the Pilot Course on entrepreneurship education in agriculture (Intellectual Output n.1).

Modules*	Learning Outcomes
Being an entrepreneur (mod.1)	• Know the definition of enterprise as a project reality and the definition of company as a business tool. • Know what the characteristics of an entrepreneur are: understand specifically what are the skills which characterize the entrepreneurial spirit and what are the potential difficulties. • Know how to develop the business through the concept of multifunctionality: know the objectives of multifunctional agriculture and know how to identify opportunities in the union between farmers' objectives and society objectives.
Creativity and innovation (mod.2)	• Recognize one's own strengths and weaknesses. • Know how to apply one's own knowledge, finding creative applications and solutions. • Skills related to problem solving, also in the context of real cases. • Know the definitions and be able to identify opportunities in the different types of innovation (product, process, marketing). • Know the types of innovation in the agri-food sector and in agribusiness.
Strategy and business models (mod.3)	• Know the definitions and objectives of strategic, operational, and financial management. • Orient oneself in business activities planning and know how to place the various types of management within the agricultural and agri-food process. • Know the different types of strategies: product-market, local, international, and global. • Know the possible strategic areas of business (cost leadership, product differentiation, and niche marketing) and be able to recognize the advantages and disadvantages in relation to possible market dynamics. • Orient oneself among the different types of strategies and identify the most suitable ones depending on the different types of business.
Market analysis and Marketing Plan (mod.4)	• Know the concepts of vision and mission of a company and know how to develop one's own idea according to these two concepts. • Know the contents of the Business Model Canvas and develop one's own business idea within it. • General knowledge of the local agri-food market. • Orient oneself in the simplified analysis of competitors, in the segmentation of consumers, identifying their peculiarities and needs. • Know the contents of a Business Plan and know how to schematically develop its contents. • Develop critical thinking and concretize the contents learned in the different modules by means of the creation of an entrepreneurial idea.
Web marketing and social media communication (mod.5)	• Understand the different and new forms of communication for the market and for the customer. • Understand the different approaches of the agricultural entrepreneur towards communication: passive and active forms of interaction.

An assessment test was administered at the end of each of the modules of the Pilot Course. Each test was developed on *Google modules* and was structured as to be:

- an indicator of the level of acquisition only of the students' skills,
- of quick and immediate execution, by means of multiple choices,
- closely linked to the contents of the modules.

2. Assessment: the results

The students who participated in the Pilot Course (and were submitted to the Assessment of the acquired *skills*) are divided as follows:

VET Agricultural Institute	Total number of students enrolled in the Platform
IIS Ciuffelli (IT)	165
Dalum College Odense (DK)	58
Pavlov Institute Dobrich (BG)	83

To have an overall picture of the reading and interpretation of the results of the Assessment, it is necessary to give some indications:

- the attempt/will/wish of the TEEN FARM project to obtain indications from this Assessment, cannot prescind from the fact that the compared school systems (Danish, Italian and Bulgarian) are different in terms of:
  - different regulatory frameworks,
  - curricula of I-VET courses[8],
  - different ages of I-VET course students (in Denmark students are 18-22 years old, in Italy and Bulgaria they are 14-18 years old).
- the Covid pandemic and Distance Learning (DL): it was not possible to have homogeneity nor of times (some students took the test after the interruption due to Covid-19 pandemic) nor of modalities (some students in presence, others in DL).

The following is an extract from the results of the Assessment, from which some important considerations emerge:

- the trend of the answers seems to confirm what was highlighted at the beginning: that is, the correct answers of the Danish students are in most cases in a higher percentage than that of the Bulgarians and Italians.
- this trend is not always confirmed, it seems to be less where there are questions relating to module no. 2 “Creativity and Innovation”, where the Italian students of the IIS Ciuffelli reached a fair level of correct answers (about 70%).

Although an Entrepreneurship Education Strategy is completely absent in Italy (and, in Bulgaria, it is only partially defined) and, at the most, is left to impromptu initiatives by some teachers or institutes, it can be said that, where an activity concerning the development of the "spirit of initiative" is carried out (even within an extra-curricular path), the students are more sensitized and stimulated. This is the case of the students of the IIS Ciuffelli (Italy) and of the PGMV of

[8] Learning outcomes approaches in VET curricula (CEDEFP; 2015). The absence of a Europe-wide, transnational academic discourse on learner-centred approaches in VET makes it difficult to identify an agreed set of features distinguishing learner-centred systems.

Dobrich (Bulgaria): both groups had conducted an experience with the Junior Achievement Association[9] of the respective countries, prior to their attending the Pilot Course.

Focus 1 - Contamination among students from different backgrounds: the experience of Training Activities.

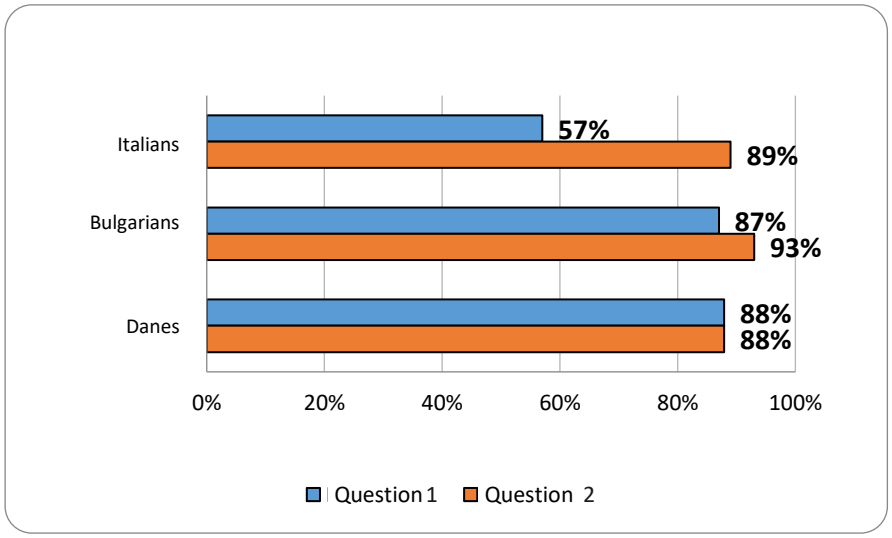
We would also like to briefly express some considerations relating to the training activities carried out during the TEEN FARM project, more precisely within the C2 Activity (Joint Training Staff). During the C2 activity, particularly the one carried out during the pandemic, the Italian and Danish students worked together according to modalities and methodologies completely new for Italians and more suited to the Danish educational path (such as role-playing, business canvas model, interviews). From the analysis of the satisfaction questionnaires processed at the end of the course, it emerges that all students indicate the teaching methodologies connected to interaction as fundamental and to be integrated into traditional teaching.

The results of the Assessment are reported below.

Table 1 - Module 1 "Being an entrepreneur"

1) What does the word "entrepreneur" mean to you? A. A person full of ideas and money who starts a business. B. A person without fear, aimed at action and adventure, surrounded by people to inspire and help, and by challenges to overcome. C. An innovator who creates a new business, tolerating the risks and enjoying the wins. (*correct answer*)
2) Choose the most important skills for an entrepreneur. A. Technical skills and failure management. B. Sense of humour and money. C. Sense of numbers and money, technical skills, and failure management. (*correct answer)*

Chart 1- Module 1, number of correct answers expressed in %



[9] https://www.jaitalia.org/ e https://www.jabulgaria.org/

Table 2 - Module 2 "Creativity and innovation"

1) Choose the various possible types of innovation. A. Process innovation, organizational innovation. B. Product innovation, marketing innovation. C. Product innovation, process innovation, marketing innovation, organizational innovation. (*correct answer*)
2) Choose the right kind of innovation in agriculture. A. Chemical, organizational, technical, technological, biological B. Mechanical, chemical, organizational, technical, technological, biological. (*correct answer*) C. Mechanical, organizational, technical, technological, biological.

Chart 2- Module 2, number of correct answers expressed in %

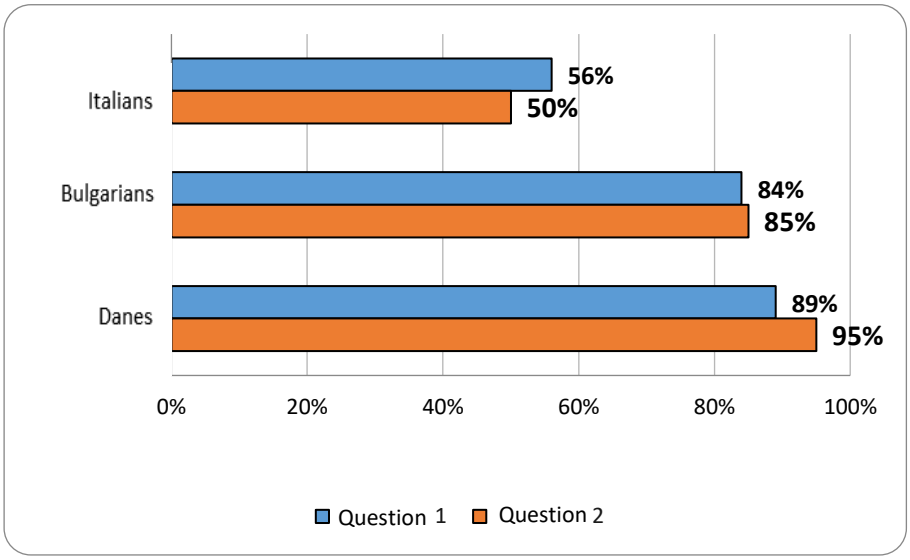


Table 3 - Module 3 “Strategy and business models”

Choose the correct definition of Strategic Management. A. Leadership through the individual organizational units of the company. (*correct answer*) B. The ability to formulate objectives and measures. C. The ability to obtain a loan.

Chart 3- Module 3, number of correct answers expressed in %

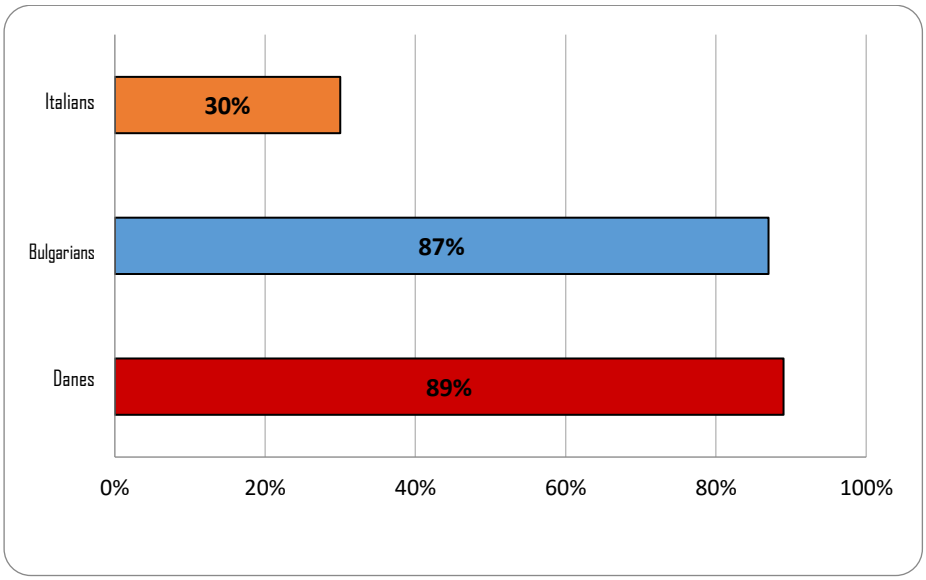


Table 4 - Module 4 "Market analysis and Marketing Plan"

1) In the study of the competition it is important to know A. The production costs of the main competitors. B. The strategy used by the main competitors. (*correct answer*)
2) The consumer's buying process is not influenced by: A. Psychological and situational factors. B. Socio-cultural factors and various marketing factors. C. Psychology and family. (*correct answer*)

Chart 4- Module 4, number of correct answers expressed in %

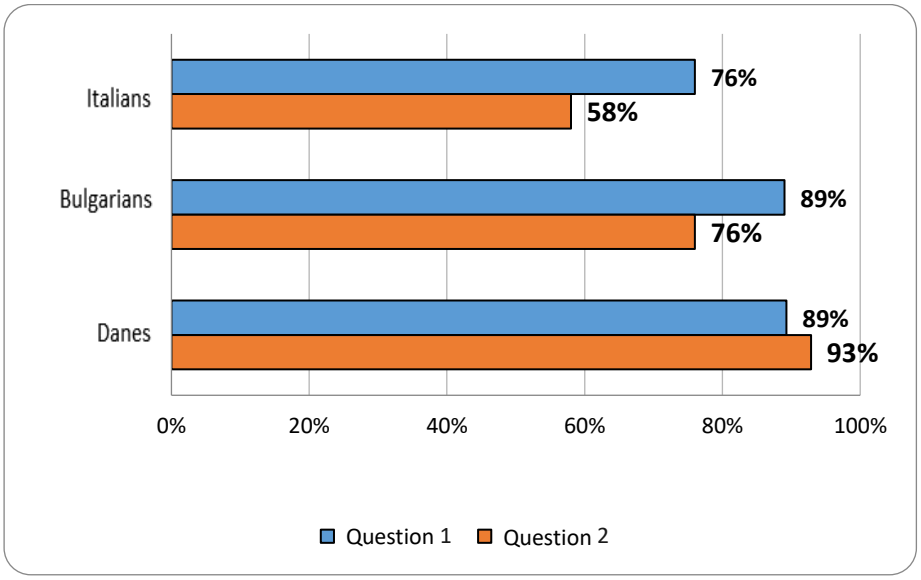
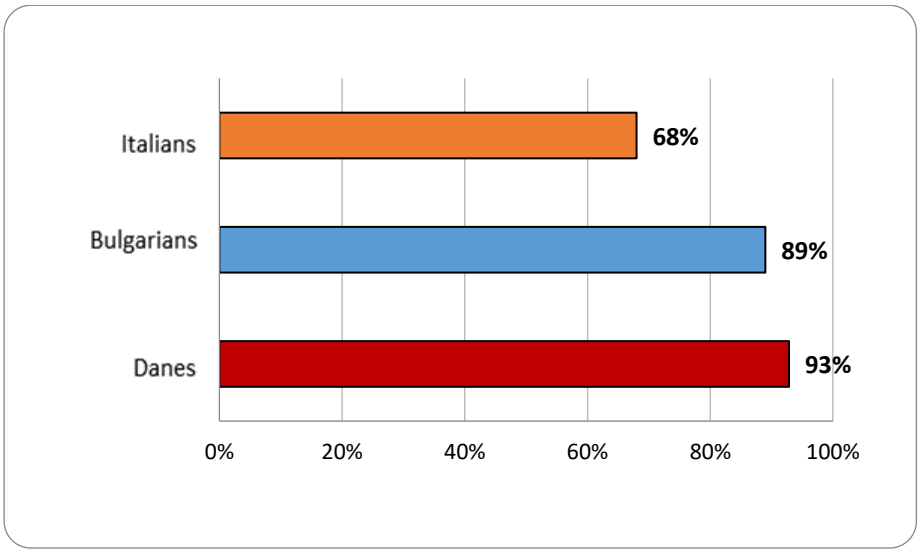


Table 5 - Module 5 "Web marketing and social media communication"

SEO is: A. A free way to increase search engine visibility. (*correct answer*) B. A free way to get first place on a hit list. C. A free way to send promotional emails to customers.

Chart 5- Module 5, number of correct answers expressed in %



3. The agricultural sector: scenarios and challenges

3.1 European policies

In January 2021, the DG for Agriculture and Rural Development of the European Commission published the Report *EU agricultural outlook for markets, income and environment, 2020-2030*[10]. The document highlights several challenges for European agriculture that can, if overcome, allow the rescue from the economic crisis triggered by Covid-19, which represents the third and greatest economic, financial, and social shock in recent years, after the *9/11* and the global financial crisis of 2008. The safeguarding of income in agriculture is mainly linked to:

- an effective application of EU Directive 2019/633 (UTPs, Unfair Trade Practices)[11],
- the transparency in the value chain (blockchain)[12],
- the protection of small-scale agroecology, (as recommended by the UN).

The opportunities to overcome these challenges are first and foremost linked to the ecological transition that has been promised in the EU Farm to Fork Strategy[13] (as well as in the Green Deal[14]). Other opportunities can be seen in digitization and especially in the blockchain, intended as a means of fostering transparency on the value chain and, therefore, highlighting the social sustainability of the supply chains.

Focus 2 – European policies for the primary sector (Source: European Commission)

In November 2019, the Commission published the Communication on the European Green Deal. The ambitious goal is to make Europe the first climate-neutral continent, with the goal of EU climate neutrality by 2050. In May 2020, the Commission published the Farm to Fork Strategy, which is the heart of the European Green Deal, for it systemically addresses the challenges related to the sustainability of food systems, identifying the connections that link the health of individuals, societies, and environment.

[10] EC (2020). *EU agricultural outlook for markets, income and environment, 2020-2030.* European Commission, Directorate-General for Agriculture and Rural Development.

[11] Dario Dongo. *Pratiche commerciali sleali, la direttiva UE 2019/633.* GIFT (*Great Italian Food Trade*). 4.5.19, https://www.greatitalianfoodtrade.it/mercati/pratiche-commerciali-sleali-la-direttiva-ue-2019-633

[12] https://ec.europa.eu/digital-single-market/en/news/european-blockchain-strategy-brochure

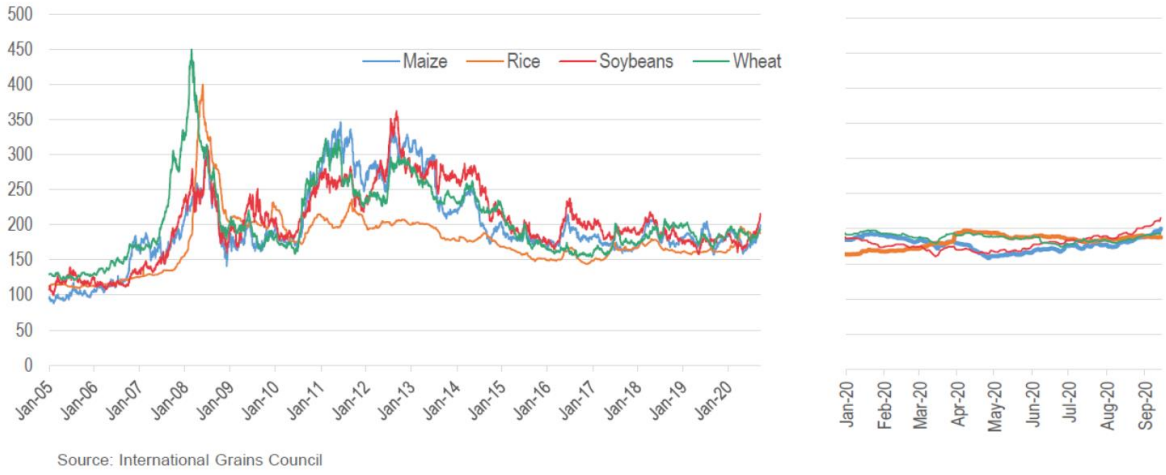
[13] https://ec.europa.eu/food/farm2fork_en

[14] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

3.2 European agriculture during the COVID-19 pandemic

The COVID-19 pandemic has triggered a global economic crisis and this emergency has put (and still puts) a strain on economies around the globe. The results of the models and the comparison with the evidence of various studies show that the agri-food industry is not among the most affected by the current crisis, despite the presence of even significant critical issues for some sectors. This depends on the lower relative elasticity of demand for agri-food products. Figure 3 shows an example of the price for commodities (wheat, rice, etc.) on the global market.

Figure 3. Agricultural Commodities Prices (Source: International Grains Council)



Following the outbreak of Coronavirus, the European Union's agri-food sector has showed its resilience and has continued to provide Europeans with high quality and safe food. Nonetheless, farmers and producers were (and still) are facing difficulties and increasing pressure. Maintaining food security remains one of the European Commission's priorities. Thus, it has been in close contact with EU countries and sectoral organizations to closely monitor the situation. To support all actors involved, the Commission has taken the necessary actions[15], some examples are: New rural development measure; Higher advances of payments; Flexibility in the use of financial instruments under rural development.

[15] https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/farming/documents/factsheet-covid19-agriculture-food-sectors_en.pdf

Figure 4. Flyer published by the European Commission during the Covid-19 pandemic.

In order to **describe scenario and farming actor's behaviour,** European Commission has provided examples[16] of projects and initiatives primarily launched by rural communities in coping with the COVID-19 emergency, supporting rural businesses, and fostering solidarity, such as:

- EIP-AGRI: strengthening agricultural resilience in the context of COVID-19[17]
- COVID-19: the 'Work Harvest' website for job placement in the agricultural sector[18]
- Lend your arms to the French agricultural sector![19]
- European "food heroes"[20]
- COVID-19 response: the role of platforms, commons and fablabs[21]
- Italian families help each other and support local food producers[22]
- COVID-19 Information Hub in Scotland[23]

[16] https://enrd.ec.europa.eu/rural-responses-covid-19-crisis_en
[17] https://ec.europa.eu/eip/agriculture/en/news/eip-agri-strengthening-agricultural-resilience?pk_source=mailing_list&pk_medium=email&pk_campaign=newsletter&pk_content=nl_11_2020
[18] https://enrd.ec.europa.eu/sites/enrd/files/project/attachments/gp_hu_work_harvest_545_web_fin_1.pdf
[19] https://desbraspourtonassiette.wizi.farm/
[20] https://mailchi.mp/fooddrinkeurope/foodheroes
[21] https://webgate.ec.europa.eu/fpfis/wikis/display/SEC/Online+session+1%3A+Civil+society+and+Social+Economy%27s+response+to+Covid19
[22] https://enrd.ec.europa.eu/news-events/news/italian-families-help-each-other-and-support-local-food-producers_en
[23] https://www.ruralnetwork.scot/covid-19-information-hub

3.3 The prospects for the future: thinking about post-COVID

The health emergency has highlighted the great potential of the agricultural and agri-food world, making it a protagonist in the economic context: as mentioned at the 2020 EU Agricultural Outlook conference[24], there are many opportunities, challenges, and risks in a post-COVID world, including:

- on the world market side: the increase in the prices of agricultural products,
- on the demand side: increase in food consumption,
- on the supply side: the need to face complex challenges related to sustainable production.

To cope with the challenges of relaunching economy, some **strategic development lines** for the agricultural and agri-food sector could concern:

- **Research:** "produce" the necessary knowledge.
    - New technologies for farms "revolutionize the game" in the generation of knowledge to face sustainability (agriculture 4.0).
    - Resistance to change is often linked to the agricultural entrepreneur's fears and misperceptions about science (lessons learned from COVID).
- **Best practices:** transfer the knowledge necessary for a green recovery (a broad spectrum of practices shows that "economic and environmental efficiency" can be synonymous).
- **Digital transition:** connect all the actors of the agricultural and agri-food chain around sustainability: the pandemic has accelerated the digital transition, directly connecting producers to consumers in many, different ways (see Focus 5).
- **Infrastructures:** it is necessary to spread as much as possible the optical fibre and all related services, so as to allow companies to really take advantage of the innovations of *agriculture 4.0*, all also to stop the depopulation of inland areas, create jobs for young people, and guarantee maintenance of the territory.
- **Public policies.** Countryside is fast moving; public policies must move forward. Rural economies are full of opportunities. New technologies and products, growing demand and the development of a sustainable economy, high speed connection to the world, and access to efficient educational systems are powerful levers of growth and jobs. In the meantime, rural areas are confronted with major challenges. So, Europe needs to

[24] https://ec.europa.eu/info/events/sustainable-development-goals/2020-eu-agricultural-outlook-conference-2020-dec-16_en

be ambitious and build a political framework that matches this ambition. This means both developing our capacity to look ahead some ten years or so and increasing our ability to build coherent and multidimensional strategies for key economic sectors, especially agriculture.

- **Education and training:** as indicated in the study *Farmers of the future*[25] carried out by the team of the JRC Unit.I.2 Foresight, Modelling, Behavioural Insights & Design for Policy (A. Bock, M. Krzysztofowicz J. Rudkin V. Winthagen), future farmers' profile will require the *"combination of agronomic, technical, and environmental knowledge, and skills, such as entrepreneurial, financial, management, negotiation and conflict resolution skills".* This *"required combination……renders intensive farming a highly qualified profession"*.

As for the last point, relating to Education and Training, the following paragraph intends to give some indications resulting from the outcomes collected by the TEEN FARM project, useful for systematic introduction of **Entrepreneurship Education in VET courses in the agricultural field**.

This, most of all, in the light of what is expressed in the *Council Recommendation on Vocational Education and Training (VET) for sustainable competitiveness, social fairness and resilience*[26] (COM (2020) 275 final). In this Recommendation, it is recalled that *"…...the broader twin transitions towards **a more digital and greener economy** will require VET to adapt so that vocational learners acquire the skills needed for the green and digital transitions…... The Next Generation EU*[27] *will raise new financing on the financial markets for 2021-2024 for the newly proposed **Recovery and Resilience Facility***[28] *and **REACT-EU***[29]*. Both programmes will include investments **in skills, education, and training** to lay the basis for a green, digital and resilient recovery……"*.

[25] https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/farmers-future
[26] https://eur-lex.europa.eu/resource.html?uri=cellar:8e89305c-bc37-11ea-811c-01aa75ed71a1.0011.02/DOC_1&format=PDF
[27] COM(2020) 456 final
[28] COM(2020) 408 final
[29] COM(2020) 451 final

4. New knowledge and know-how in the agriculture of the third millennium – lines of action for new educational schemes

4.1 A new model of agriculture

The keyword of the future of European agriculture is "BUSINESS", increasingly called to "redefine its trades" in the face of international competition and new products and services required by the market and new consumers. In the past, the necessary skills were purely technical: it was necessary to concentrate on the production of one or a few products, sometimes even at the expense of hydro-geological, landscape, and biodiversity balance.

Today, conversely, following the change in preferences and the availability of consumers' income, the value of agricultural activity no longer resides only in the raw and standardized agricultural product, but in the many distinctive agri-food qualities of the territories and in the multiple service activities " connected ", accompanied by important marketing actions. For the new consumer, the value lies in the services and in the added value represented by food, which tells "stories" and aims to safeguard local traditions and protect biodiversity and environment.

Focus 3. The rediscovery of the rural thanks to COVID-19.

According to ISTAT data, summer 2020, characterized by strong losses in presences and arrivals of foreign tourists (-68.6%), nevertheless, sees Italians move favourably towards "rural areas".

This is a further sign given to the agricultural world of how important it, is for the farm, to change and evolve towards new forms of business, by developing activities that add value to the products of crops and livestock and which, at the same time, offer services very diversified to guests, consumers, visitors, and local communities.

Agriculture takes on again centrality not only as a producer of food, but as a determining piece of the processes that define the mosaic of territorial socio-economic development. In this context, also the role of the rural territory changes and evolves. In fact, we are witnessing a revaluation of the countryside as an attractive context, not only for productive activities, but also for housing and new forms of sustainable tourism. In addition, a rediscovery of rural environment is underway, as a place capable of offering sustainable life models and environmental, cultural and food values alternative to urban-metropolitan ones.

The **new model of agriculture**, as a rural economy development factor, is therefore based on three elements:

- healthy production methods, respectful of the environment, able to supply quality products that meet the consumers' needs,
- traditions, whose aims are not only to produce, but also to safeguard the variety of the landscape and maintain rural communities lively and active, capable of generating employment,
- entrepreneurs with increasingly diversified skills, capable of orienting the "new trades" by integrating the historical role of being mere producers of goods and foodstuffs with that of producers of FOOD and of providers of multifunctional services.

4.2 The profile of the multifunctional agricultural operator and entrepreneur: some indications

The features of the new agricultural (and agri-food) model require a renewed professional profile for the agricultural entrepreneur, as he necessarily must overcome the sectoral approach to connote himself with an organic vision of the internal and external system of his business. In the light of all this, here are some necessary skills:

- intervene directly in the planning, organization, and management of farm production (Precision Agriculture) and in the services offered in relation to the demand and different needs of consumers and markets, to enhance the territory resources and culture also by using the new digital communication technologies,
- use process and product innovations in the field of agri-food production and processing, interpreting the development of agri-food chains of excellence, to adapt production and sales in relation to the demand of national and international markets and of the consumers,
- develop the maximum synergy between hospitality and reception services and social agriculture services, through the planning and organization of events that enhance the heritage of the company environmental, artistic, cultural, and educational resources as a moment of Social Inclusion expressed towards situations of physical and social hardship,
- intervene in the enhancement, production, transformation, conservation, and presentation of quality food and wine products,
- operate in the production system by promoting the typicality of local traditions and applying the regulations on safety, transparency, and traceability,
- carry out operational and management activities in relation to the administration, production, organization, supply and sale of food and wine and food products and services to the community and people,
- carry out operational and management activities concerning the administration, production, organization, supply, and sale of food and wine products and of services directed to the community and people.

Bibliography is very articulated and, even before Covid-19 crisis, in a study published by the European Commission entitled *"Needs of Young Farmers"*[30], young farmers across Europe were asked to rank 11 skills in order of perceived importance. Once again, technological knowledge

[30] http://publications.europa.eu/resource/cellar/fa9c8e5e-eff8-11e5-8529-01aa75ed71a1.0001.01/DOC_1

scored the highest, while increasing skills in farm strategy was rated as the second most important skill, emphasising the need to give more attention to this topic.

Figure 5. The three levels of Management (Source: Wageningen University)

The aforementioned study *Farmers of the Future*[31], published by the JRC in 2020, explores, in the medium and long term, who will be, in the future, the farmers who will have to face the challenges of a hypothetical scenario in 2040. The study pinpoints five emerging themes on which business models and agricultural practices can be based. They are:

I. technological changes in agriculture,
II. food production,
III. future sustainability,
IV. relationship with the consumer (and expectations of society),
V. breeding and animal welfare.

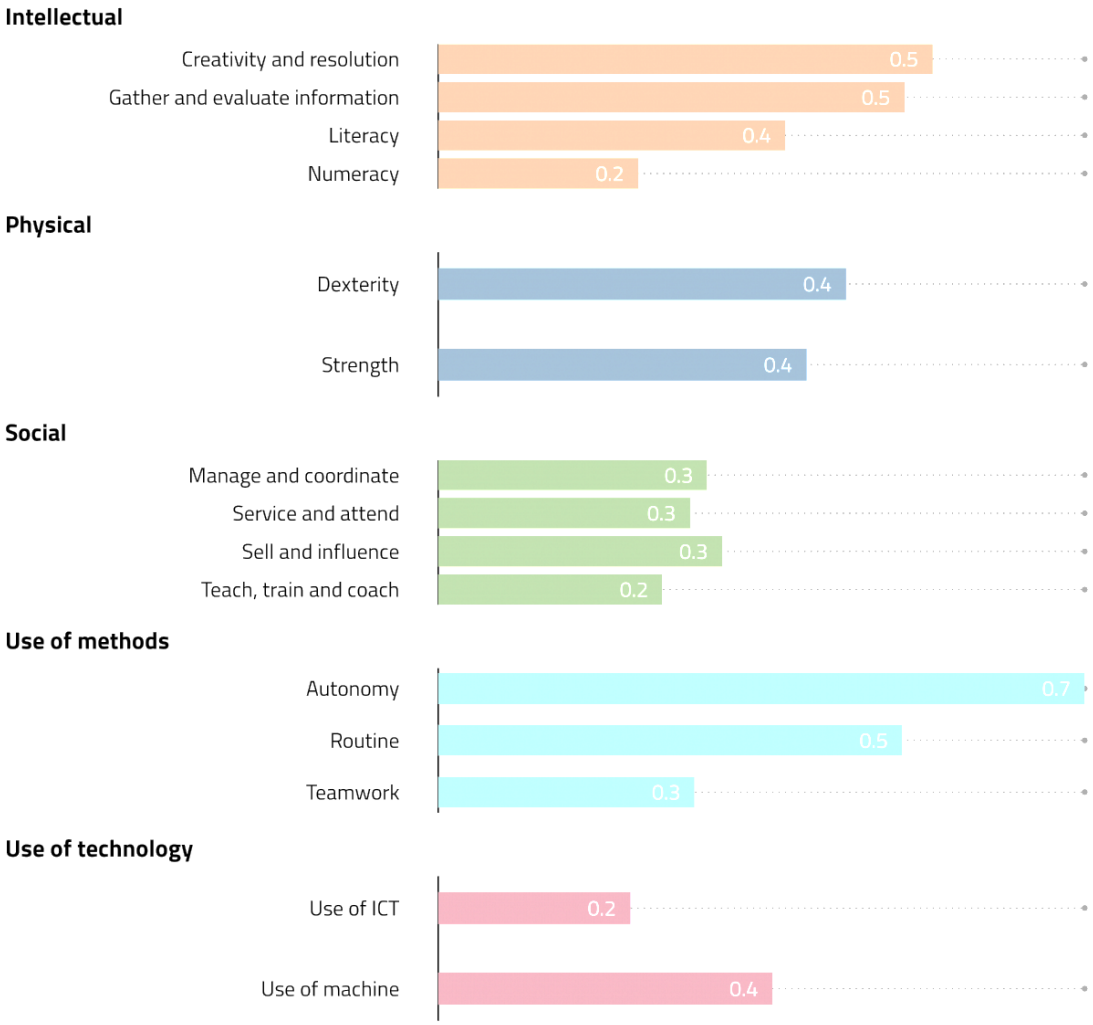
The CEDEFOP publication *Farmers and gardeners, skills, opportunities and challenges (update 2019)*[32] reports, on a 0-1 scale, the skills of the agricultural entrepreneur that stand out for their importance; they are the same ones that have been extensively discussed and presented during the TEEN FARM project activities, such as:

- creativity,
- autonomy (in the sense of aptitude for business strategy and planning),
- ability to gather information (and recognize opportunities).

These and other entrepreneurial skills have been presented and articulated in the Curriculum proposed in section 4.4.1.

[31] https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/farmers-future
[32] https://skillspanorama.cedefop.europa.eu/en/analytical_highlights/farmworkers-and-gardeners-skills-opportunities-and-challenges-2019-update

Figure 6. Skills of workers in the agricultural sector (Source: CEDEFOP).



The necessary and constant evolution of the profile of the agricultural entrepreneur requires a re-reading of training needs and objectives, as well as of the professional training chain, which necessarily becomes more extensive and integrated (from Technical Vocational Training to VET and Higher Technical Education and Training – *Istruzione e Formazione Tecnica Superiore*, up to Higher Technical Education – *Istruzione Tecnica Superiore*, and Professionalizing Degrees), in a European framework.

The connection between school / university / research, supported by companies and productive actors (the entire ecosystem), will allow the development of a human capital that is up to the challenges of agriculture of our age: **manufacturing 4.0, digital technologies, sustainability, tourism, and green economy**. The development of a territory and its people is in fact the higher the stronger and more solid the networks are between schools, research centres and training agencies, and, above all, organizations representing companies and their development design capability.

4.3 Guidelines for the inclusion of Entrepreneurship Education in VET-I

The effort that the TEEN FARM project would like to make is in the direction of what emerges from the recent ***European Skills Agenda***[33] of the European Commission: the Agenda proposes to make the first **pillar of European social rights**, dedicated to Education, training, and lifelong learning, come true.

The inclusion of **Entrepreneurship Education** in educational schemes is certainly a piece of a larger, more complete, and laborious process since, in order to guarantee a real training offer to the various actors and territories, it is necessary to strengthen the connection between the moment of **Planning** and that of the **Training Offer**. Nevertheless, we can consider that the time of change has come:

- among the objectives regarding VET, EU institutions recall the importance of **further strengthening key competences** in VET curricula and of providing more effective opportunities to acquire or develop these competences by means of initial and lifelong vocational education and training,
- at the same time as this Report is being drawn up, other projects appear in the landscape of Entrepreneurship Education in agriculture and food, such as EntreCompFood, funded by COSME Program[34].

Focus 4. EU policy in VET field.

Vocational Education and Training (VET) is a key element of lifelong learning systems. Its aim is to equip citizens with the knowledge, skills and competences required for specific professions and on the labour market. European cooperation in vocational education and training was further strengthened by the **Bruges Communiqué**[35] and by **Riga Conclusions**[36]. The Advisory Committee on Vocational Training itself has approved an **opinion**[37] on the future of VET, which will contribute to the European Commission's policy making after 2020.

[33] https://ec.europa.eu/social/main.jsp?catId=89&furtherNews=yes&langId=en&newsId=9723
[34] https://www.gzs.si/entrecompfood/vsebina/About-the-project/Summary
[35] https://www.eqavet.eu/Aligning-with-EQAVET/Aligning-a-QA-approach/Bruges-communique
[36] https://www.cedefop.europa.eu/fr/news-and-press/news/european-ministers-endorse-riga-conclusions-vet
[37] https://ec.europa.eu/education/policies/eu-policy-in-the-field-of-vocational-education-and-training-vet_it

As already mentioned, designing, modifying, and adapting a Curriculum in a VET-I path (as in any other segment of the education system) requires a long, structured, well-detailed path, complete with data and, above all, includes the involvement of a set of factors and actors, as in an ecosystem. It is so also for **Entrepreneurship Education**. As indicated in the Final Report of the Thematic Working Group on **Entrepreneurship Education**[38], *"…...**Entrepreneurial learning ecosystems** comprise several interlinked elements (building blocks) that form a dynamic whole: policies, stakeholder engagement, entrepreneurship education (or learning) and measuring the impact…."*.

Below are some considerations and ***lines of action for schools and the whole ecosystem system* for Entrepreneurship Education *in VET Education***[39]: these lines of action are designed for each area and sector (not only agriculture, which is the specific field of the TEEN FARM project).

Line of action No. 1. Strengthen the entrepreneurial spirit and proximity to the business world. The transformation of the school must be supported as a place for dialogue and source of ideas, space for meeting, discussion, and planning of the future by means of the development of projects for innovation, dealing with issues that allow the creation of a direct connection between business, research, and the entrepreneurial fabric. Tech companies, called on to intervene in schools, can play a central role in the creation of these spaces. This intervention will facilitate the creation of physical spaces within the school, furnished with digital technologies. Collaboration with companies will allow students to develop important work skills to achieve an entrepreneurial mindset. Promotion of associationism in the after-school time and of secondary activities go in the same direction and have to be recognized at the curricular level. Collaboration with Volunteer Service Centres to encourage orientation opportunities for young people, and introduction of ways to make alternation school-job more fluid.

Line of action No. 2. Digital education. To generate change in the school system it is necessary to start from those who actually live our school today: students and teachers[40], placing them at the centre of a *digital community*, where one can:

- talk about innovation pilot projects,
- facilitate the exchange of ideas and skills.

[38] https://ec.europa.eu/assets/eac/education/experts-groups/2011-2013/key/entrepreneurship-report-2014_en.pdf

[39] These lines of action have been reworked on the basis of the following documents: a study carried out by the Coldiretti Divulga Study Centre, Symbola Report, Unioncamere Report, Next Generation EU Report.

[40] Piano di azione per l'istruzione digitale 2021-2027 https://ec.europa.eu/education/education-in-the-eu/digital-education-action-plan_it

In this sense, the digital gap generated by age must certainly be tackled. According to the *Education and Training Monitor 2019*[41], in Italian secondary schools, the percentage of teachers over 50 years old reaches 60%. The Covid crisis, which has forced schools to rapidly adapt to remote technologies, bodes well for the school system's ability to react and respond to the digital challenge.

Focus 5. A look at digital technologies.

The contemporary debate on today's work and on the work of the future revolves around the themes of **digital skills**[42], the search for new professional profiles to be included in production processes, and the qualification and retraining of the staff already employed. In the ongoing debate, the aspect relating to the creation and redistribution of jobs caused by the 4.0 revolution emerges, that revolution dictated by the advent and extremely rapid spread of digital technologies. In addition, there are professions that will remain, but will be transformed. Many traditional jobs are in fact undergoing a metamorphosis, as they are heavily affected by digitalization. These phenomena affect all sectors, each production sector, and all businesses, including agricultural ones.

Applying this approach in the digital and agricultural 4.0 context, means starting from the professions - new / not existing before or traditional / updated - and identifying for each professional profile / role the mix of:

- *Basic ICT* skills. Digital technology has its roots in the skills related to Information & Communication Technology. This area includes the skills needed by ICT professionals to support organizations by means of ICT processes.
- *Digital skills* specific to the type of professional figure / role. This area includes technical and procedural skills related to specific organizational roles that allow people to carry out their work in a modern and innovative way.
- *Soft skills* necessary for the professional figure / role. They are the transversal interpersonal and communicative skills that allow people to effectively use the new digital tools. The European Commission's *Digital Competence Framework 2.0* (**DIGICOMP 2.0**) [43] can be the reference for the competence mapping framework.
- *Innovation Skills*. They represent the combination of cognitive, behavioural, and functional skills that allow people to become innovative in their work by a behaviour based on entrepreneurship, initiative, anticipatory vision, and the ability to mobilize and contaminate resources and skills within and outside the organization. One possible reference is **the European Entrepreneurship Competence Framework**[44] of the European Commission.

Line of action No. 3. Orientation to transformation. If on the one hand students are preparing to build their future, on the other business organizations govern the present and innovate by interpreting what they see happening in the world. A first goal could be to extract from the school and student world *a laboratory for the elaboration of the future*, namely the creation of co-innovation spaces that involve students and one or more companies in realistic work scenarios.

[41] https://ec.europa.eu/education/resources-and-tools/document-library/education-and-training-monitor-2019-italy-report_it

[42] See also: https://ec.europa.eu/digital-single-market/en/policies/digital-skills

[43] https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework

[44] https://ec.europa.eu/social/main.jsp?catId=1317&langId=it&furtherPubs=yes

Another opportunity could be given by open innovation, with the sharing of concrete experiences and case histories. The back-to-school experience is also interesting: a public representative is welcomed into the school as an "ambassador for a day" to present his or her personal experience. The methods of overcoming the frontal lesson should be encouraged by means of a digital updating of the teaching and developing the laboratory (practical workshops, hours of debate). A redistribution of lesson hours could lead to the inclusion of new disciplines, such as: digital economy, media education, environmental sustainability, entrepreneurship, and business risk. The road to the ever-increasing involvement of learners passes through the customization of courses already in compulsory schooling, the promotion of multidisciplinary projects and a greater educational openness. Finally, education and training paths must provide soft skills for the working world and educate to non-marginal skills, such as team building and empathy, communication, emotional education, and stress and failure management. All this, because the society of the future requires technical and specialized skills but also ability to know how to adapt them and flexibility in responding to the complex problems awaiting new generations.

It is in this direction that the case study represented by the TEEN FARM project fits, as its mission has been to identify paths of **Initial Vocational Education and Training, I-VET (EQF level 3-4) for Entrepreneurship Education in agricultural field** and to verify its goodness in terms of acquired skills (as reported in section 2.). The attempt of the Teen Farm project to articulate a training path according to *Entrecomp*[45] *- European Entrepreneurship Competence Framework* model is illustrated below, so to highlight which specific skills could best respond to the "training" of the profile of the agricultural entrepreneur, according to an entrepreneurial vision pertaining to the bases and requirements of the Green Deal[46].

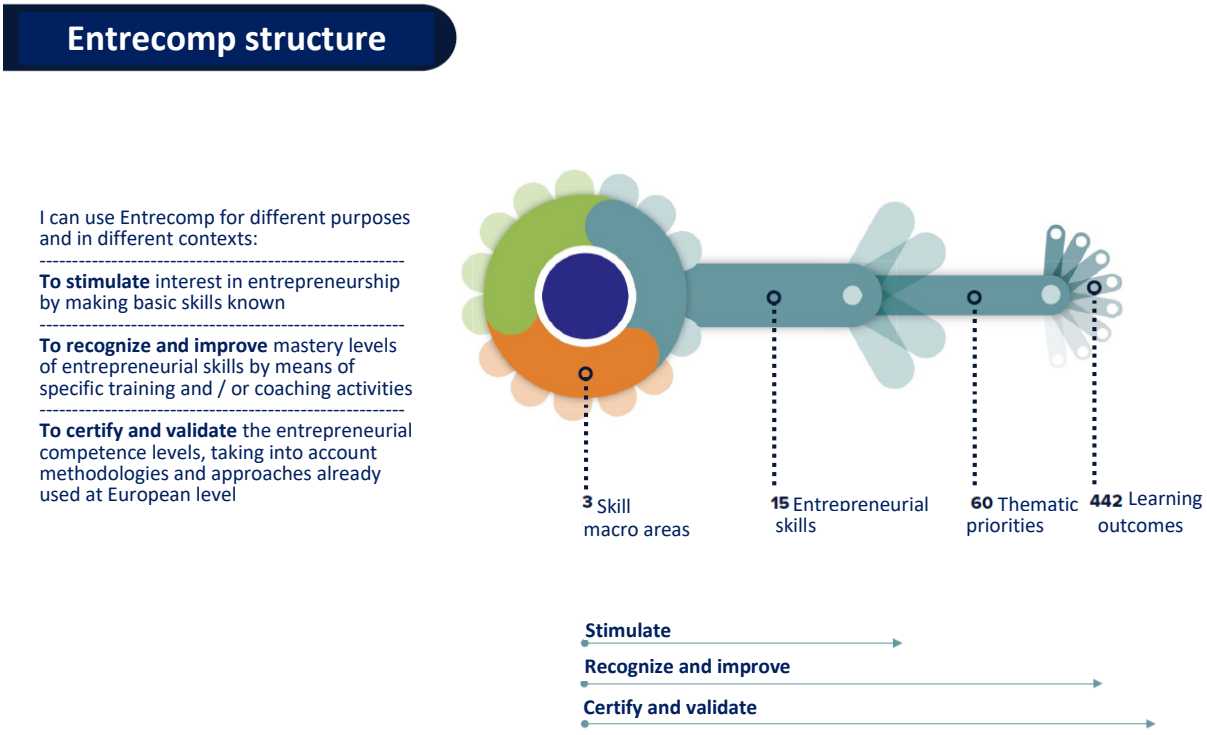
[45] https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/entrecomp-entrepreneurship-competence-framework

[46] Commission Communication “Working together to strengthen human capital, employability and competitiveness”, COM/2016/0381 final.

4.4.1 The Teen Farm Curriculum

Thanks to the opportunity be part the Italian Community of Entrecomp[47], the TEEN FARM project has developed a Curriculum based on the "flower" pattern of Entrecomp model.

Figure 7. Entrecomp structure (Source: https://www.entrecompitalia.it/).



[47] https://www.entrecompitalia.it/

The following is the Curriculum, articulated on *Learning Outcomes*, for the profile of an I-VET level student with an intermediate mastery level of entrepreneurial skills. It has been identified based on the self-assessment tool developed by Entrecompitalia[48].

Figure 8. The Curriculum of the TEEN FARM project (Source: our elaborations)

Macro-areas	Entrepreneurial skills	Learning outcomes
IDEAS AND OPPORTUNITIES	**Recognize opportunities**	Be aware of one's own business choices, knowing their impact on environment, society, and on the company itself: financially, on its strategic positioning on the market and on the business image. Know the main objectives set by the European Union in terms of sustainable development policies (Green Deal) and understand how one's own business idea can be aligned with the latter.
	Creativity	Developing creativity means nurturing curiosity for one's own sector and field of study, knowing the reality of local agricultural businesses too. It is essential to be aware of potential difficulties in daily agricultural activities and respond to them with the development of professional creativity, which is linked with being able to see new opportunities for one's own business idea in market trends and great sector changes. Moreover, know how to recognize the added value of business ideas other than one's own and know how to implement and adapt them to one's own business vision. Learn to create innovative solutions that effectively meet the needs of the company.
	Vision	Know the mechanism of supply and demand in the agri-food market and the main trends taking places. Know how to translate one's own ideas, the needs of society and environment and fill the gaps in the agricultural and agri-food sector by means of the definition of a *business vision* from which one can start to outline: long-term objectives, a strategy to pursue them, directives for the functional areas of the company, an organization, and action plans.
	Giving value to ideas	Know how to recognize the value of one's own ideas and those of others, developing the ability to cooperate and apply the main innovations in the agri-food sector in order to achieve the specific objectives which constitute the company's mission. The room dedicated to the enhancement of one's own ideas is essential for the entire business management process, both in times of crisis and in planning, so as to seek to provide new development prospects for the company.
	Sustainable ethical thinking	Recognize the environmental and socio-economic criticalities of the agri-food sector and find innovative solutions that respond to these needs by making them an integral part of one's own business vision and recognize oneself as an active part in solving these problems. Establish one's own business idea on a "green" approach, recognizing one's own responsibility in protecting biodiversity, landscape, and animal welfare. Recognize the need for a more sustainable production and, as well, for a more sustainable consumption, by means of supply chain tracking and labelling strategies (reference to the European *Farm to Fork strategy*).
	Motivation and perseverance	Make use of the knowledge of oneself and of one's own abilities to find the fields of greatest interest, focus on one's own business idea and on its aims, and fully understand the motivations that led to its creation. Having a specific purpose will help to persevere and cope with possible challenges.
	Economic and financial knowledge	Knowing how to orient oneself in the budgetary mechanism of revenues and costs, knowing which are the main sources of financing by continuously keeping abreast on Community agricultural policies.

[48] https://www.entrecompitalia.it/autovalutazione-con-entrecomp/

IN ACTION	**Take the initiative**	Know the consequences related to each business choice in relation to the dynamics of the sector, recognize opportunities and know how to seize them with a spirit of initiative, acting with awareness and effectiveness with respect to the vision and objectives of the company.
	Planning and management	Knowing how to define achievable goals consistent with one's own business vision, analysing the market with its main competitors and knowing the tools to be able to acquire growing competitiveness. Know strategic and operational management, setting short and long-term objectives based on the strategic business area in which the company is located. Know how to define a business plan that summarizes in a clear and effective way, by means of a market study and an internal analysis of the company, potential and limits of one's own business idea. Identify the main efficiency indicators and periodically plan monitoring.
	Working with others	Get to know other operators in the agricultural and / or agri-food sector, develop interpersonal and communication skills, so to learn and draw inspiration from entrepreneurial realities other than one's own (reference to the European policy *European Innovation Partnership - EIP-AGRI*). Pursue business objectives with one's own work team, making each component an active part, enhancing the strengths of each, and accepting diversities within the group.