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# EDUCATIONAL METHODOLOGICAL MODEL (EMM) FOR DESIGN THINKING

DTRAIN

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PROJECT CODE: 2019-1-EL01-KA202-062997

# T.1.7

## DTRaIN Educational Methodology

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DTRaIN - Design Thinking for Entrepreneurship in Agri-food Sector






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# Executive summary

DTRaIN is a European project that aims to revitalise the agro-food sector by promoting the acquisition of high-quality skills for managing staff/ professionals and entrepreneurs working in the sector. Thus the key objective of the project is to design a curriculum adapted to the needs of employees/professionals of the agro-food sector, developing interesting and attractive training content using the Design Thinking methodology.

This DTRaIN project is part of the 'Smart Specialization' collective, where more than 17 European regions and 16 EU countries intend to disseminate and promote innovative entrepreneurship education and youth entrepreneurship to improve the employability of the sector. In this sense, it is intended to increase the demand for quality and continuous specialized training for workers in the European agro-food industry.

The main objective is to develop a curriculum for online training through an educational methodological model that has the student as the centre of everything. This will require the use and consolidation of a Learning Management System (LMS) platform to provide learning resources and adequate training for professionals in the agro-food sector. Examples of LMS software are Moodle, Chamilo, Evolcampus, Canvas LMS and E-doceo, among others.

An educational methodology was developed **setting out** the resources, tools, and methods for delivering the DTRaIN training program to the **professionals in the agri-food sector.** To build on the Educational Methodological Model for Design Thinking a bottom-up approach was exploited that included:

- Setting up a common understanding of key characteristics of the agri-food sector in all countries involved
- Identification of the training/learning needs, learning priorities, and training practices appropriate for designing training material for professionals of the agri-food sector
- Validation/ further elaboration and enrichment of the outcomes by key informants/stakeholders of the sector.



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More specifically the activities implemented were:

- A **desk-study survey on the agri-food sector** aiming to present key characteristics of the agri-food sector of the countries involved in the DTraiN project i.e. Germany, Italy, Spain, and Greece, in an attempt to understand the sector and perform a very initial training needs assessment.
- A **Quantitative survey** using a questionnaire administered online via platform KwikSurveys to find out the opinions of the companies in the agro-food sector in each of the countries participating in the project on:
    - Training – learning needs of professionals of the sector
    - Appropriate educational approaches, teaching techniques/practices.

  The result was the **identification of learning needs of effective educational methods** for the training of professionals in the agri-food sector. The whole process was be based on a bottom-up approach to identify the learning needs of professionals and will form the basis of the design of training materials and the development of training courses on the online learning platform
- **Identification of innovative teaching methods** and practices used for developing the Educational Methodological Model and the DTRaIN curriculum in the following package of activities (WP2/IO2). Under this the use and consolidation of tools like a Learning Management System (LMS) platform to provide learning resources and adequate training for training professionals in the agro-food sector.
- **Organization of workshops** in all four European countries participating in the DTraiN project. Due to the specific COVID-19 measures, online workshops and face-to-face interviews were organized. The main scope of the workshops was to validate and complete the outcomes of the learning needs and tools assessment already performed via the desk study and survey already conducted.



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# The DTRaIN Educational Methodology and Learning approach

## 1. The Methodology

An educational method comprises the principles and methods used by trainers to enable student learning. The approaches for teaching are broadly classified into teacher centered and learner centered. The DTRaIN Educational Methodological Model is based on a "**learner-centred**" approach in training shifting the role of the instructors from givers of information to facilitators of learning. The DTRaIN educational methodology for DTRaIN has the following characteristics:

- Use of an online educational methodology, where users are provided with purely online instructional content.
- Has an attractive design of the educational platform using gamification to motivate students.
- Integrates the Design Thinking methodology in the practical part of the online course.
- Incorporates study of real problems that require reflection by students to solve them.
- Real interactive games to recall and retain the acquired knowledge and skills acquired during the online course.

More specifically, the methodological approaches of the DTRaIN EMM are:

### 1.1. Ubiquitous training - e-learning

The DRaIN course will be delivered in a fully ubiquitous environment. This approach emphasizes a variety of different types of methods that shift the role of the instructors from the givers of information to facilitating learning. This method gives the learner the opportunity to learn independently and to collaborate with the other learners while improving his skills. Case studies are used as "Design Thinking Challenges", posed by the the learners who using Design Thinking methodology, with critical and creative reflection will reach a solution.

Learners in rural areas, who are not used in digital technology, can use any mobile application like mobile phones for having the course. Additionally, they can attend a semi-



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presential classroom having a facilitator or a trainer to make the use of the DTRaIN training platform easier.

This online DTRAIN course consists of two main Modules (phases): the first module with all theoretical contents for students and the second one consisting of team work based on Design Thinking.

## 1.2. Flipped Classroom

The flipped classroom used in the Educational methodology, intentionally shifts instruction to a learner-centered model, in which explores topics in greater depth and creates personal meaningful learning opportunities. The "Flipped classroom" methodology, embraces the technique "**Design Thinking Challenges**", which will focuse on problems faced in real market situations, and been proposed by the learners in order to be personally meaningful. The learners in working teams, based on the training they have got, will use critical and creative reflection to solve them, exploring the Design Thinking process in a greater depth.

### 1.3. Instructional Design

Using **gamification** in the form of "**Serious Games**" which is an interactive learning process based on scenarios created on the "Design Thinking" Challenges. Serious games will increase learners' motivation and will enhance their ability to recall and retain the already acquired knowledge. The "serious games" will be part of the online training material.

### 1.4. Project Based Learning

Project Based Learning (PBL) as a method is engage in DTRaIN Educational methodology having the trainees learn by actively been engaged in real-world and personally meaningful projects. The "**Design Thinking challenges",** as case studies on real market problems, will be personally been imposed by the learners, being personally meaningful, who based on the training they have got, will use critical and creative reflection to solve them.

### 1.5. Teamwork with Design Thinking Methodology

Team working is inherent to implementation of Design Thinking process. D**esign thinking teams**, are highly collaborative, multidisciplinary project teams, Design thinking teams co-design both internally as a team, as well as externally with customers or end-users. The DTRaIN teaching staff in the phase of testing phase the training material developed will create a Design Thinking team, one per partner country, made up of 6 students in each partner country. Once all the teams are formed, they will work on a real market case



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problem (Design Thinking Challenge), one per country, or in one common to all countries focusing in a regional ethnographic solution.

Once the Design Thinking team is satisfied with the final result obtained, should use creativity to develop and deliver an explanatory text document or a multimedia video report of the process and the result. Finally, the assessment of the contents created will be carried out by the teaching staff and will be included in the training material that will be developed as a Design Thinking case study. The scenario of the case study/s will be the bases for the “serious game” that will be incorporated in the training material.



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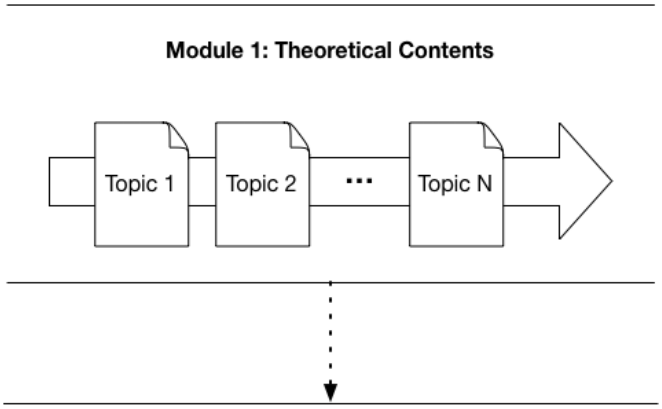


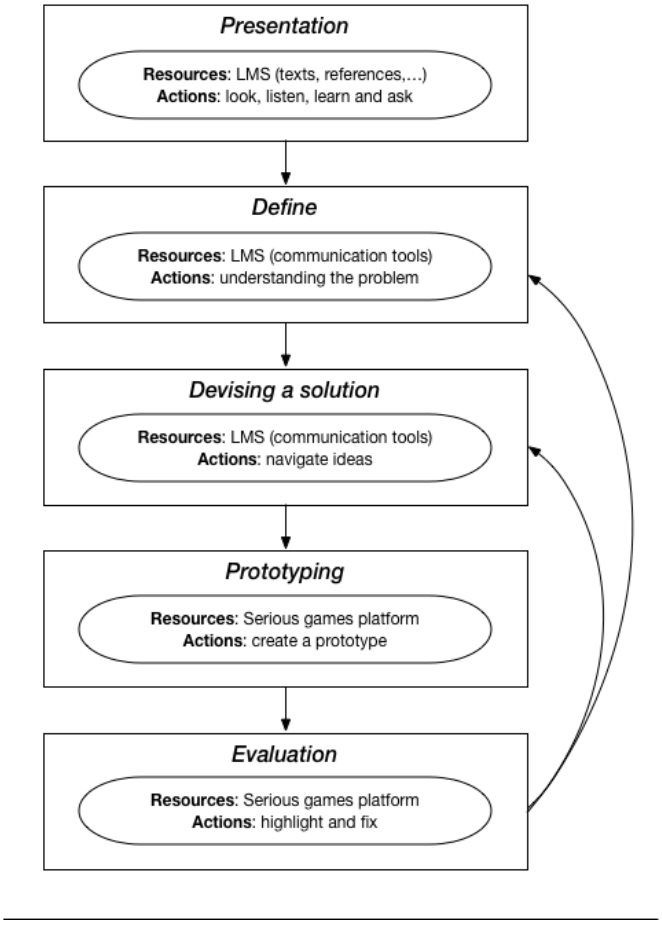


# 2. DTRaIN online course tools

## 2.1. LMS software installed on a web server

To carry out the DTRaIN course, an LMS software installed on a web server that is used to manage, distribute and control the non-attendance training (or online education) activities



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of an institution or organization. It basically allows a spatial-temporal asynchrony between the agents involved (student and online teacher) and, to a lesser extent, a temporal synchrony.

The main functions of the LMS are:

- to integrate and present in a coordinated and structured way the different modules;
- to allow and manage access through browsers and even web applications;
- to manage users, resources as well as training materials and activities also using web services;
- to manage communication services such as discussion forums, videoconferences, among others and;
- to control and follow up the learning process,
- to make evaluations and to generate reports.

It can be understood as the virtual teaching-learning situation, whose main objective is none other than to improve the distance teaching-learning experience. The LMS platform is designed and developed to bring the face-to-face educational environment into the virtual learning environment, with the consequence of virtual teaching and thus transforming the teaching-learning process.

The use of an LMS software provides great flexibility to online learners because they can learn from anywhere at any time. In addition, in LMS there are a number of options to encourage user participation online during the course, such as the notice board or forums. In the same way, online users can also send private messages to each other, so that they can exchange opinions and share interesting information.

### 2.2. Platform set up process

The process of creating the online course in LMS can be carried out by following these steps:

1. Planning (about the users, the course and the collection of information).
2. Initial course configuration.
3. Production and publication of content.
4. Installing the necessary plug-ins.
5. Final settings in the configuration.
6. Testing the final version of the course.
7. Launch of the official course.



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In the planning phase, a list of requirements will be prepared to be met, so that the platform can be set up correctly. In particular, it would be necessary to determine the following:

About the online course:

1.1. Determine the language in which the course will be available: if it will be only in English or if it will be also available in each of the languages of the project partners (Greek, Spanish, Italian and German).

1.2. Temporal distribution of the course in order to have clear dates to be followed.

1.3. Course structure: graphic design and online course sections.

1.4. Establish what type of theoretical content will be exposed on the online platform, depending on whether it is text, multimedia or interactive content.

1.5. The form of presentation of the theoretical contents, preferably using some interactive activity plugin such as Moodle's H5P.

About the users:

- Estimate the approximate number of students to establish the size of the virtual machine of LMS.
- Determine the personal information needed to collect the characteristics of the online students.

About the information that will be collected during the course:

- The users' statistics about their progress in the course.
- The results that the students will obtain in the tests.

### 2.3 Tools for registration and communication process

Regarding the registration process of the students to enrol in the DTRaIN course, in order to have a better control, first the student must make the application to enrol in the course and then the DTRaIN project management will accept the applications. The student registration will consist of a form with the following mandatory fields to be completed: first name, last name(s), e-mail address, password chosen by the user, age of the respondent, position of the respondent within the company, highest level of education completed by the respondent, activity in which the company is engaged and size of the company, among others.

In order to keep students informed about the course, its performance and any new developments, a communication policy can be developed. The information will be provided by the teaching staff DTRaIN technical team to the students during the course through messages on the platform, which at the same time would reach the personal e-mail of each user. Regarding the development of teamwork, the DTRaIN technical team can send



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messages to students about the lack of activity or messages to warn of the departure of a group member.

## 3. The structure of the DTRaIN online course

Regarding the training contents of the course, the modules or theoretical chapters are prepared by the partners, from the information gathered in the surveys and online interviews carried out in each of the countries. The aim of the theoretical contents is to complete the training of the online users according to the learning needs detected previously.

The theoretical contents topics of the course will be organized by sections sequentially. These interactive contents will be presented preferably as interactive content activities, within which both edited text and multimedia elements of embedded video with links can be introduced.

After each theoretical module, a section will be established for the user to take an evaluation test and thus see his learning evolution during the online course.

Design Thinking is an innovative, creative and human-centred educational methodology that employs collaborative multidisciplinary team-works to solve problems using creativity and innovation, applying an empathetic, flexible and iterative approach. **The subjects that will define the Design Thinking group work will be based on the following:**

- **Module 1 – Pre-steps in Design Thinking**: In this first stage, will be introduced in Design Thinking methodology, the steps and in the DTRaIN training platform. They will be presented the training working method they will work with. The goal in this stage is awareness. It might be a sense of wonder at a process or an awareness of a problem or a sense of empathy toward an audience. Firstly, the students must look, listen, and learn, and, secondly, sparked by curiosity, students must ask tons of questions. They can share these questions with friends, teachers, mentors, and the world. Students will be provided with a set of problems (or work proposals) based on the identified learning needs. Also, the teaching staff will provide a series of digital resources (links, documents, videos, interactive modules, etc.) including the training needs that are required to succeed in the development of the solution.
- **Module 2 - Observation/ Define**: Search for possible solutions. This stage leads to understanding the problem through an authentic research experience. Students might conduct interviews or needs assessments, research articles, watch videos, or



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analyze data. During this stage they are constantly putting their work out for others to look at and give feedback. Students will have at their disposal a set of tools to facilitate communication within the teamwork, with teachers and with the rest of the world. Some of these tools can be forums, video meeting rooms for remote tutoring, etc.

- **Module 3 - Ideation/ Devising a solution**: Students apply that newly acquired knowledge to potential solutions. In this stage, they navigate ideas. Here they not only brainstorm, but they also analyze ideas, combine ideas, and generate a concept for what they will create. At this stage students will continue to use mainly communication tools, but in this case these tools should be more interactive and oriented to group work, such as shared virtual whiteboards, applications for mind mapping and brainstorming, etc.
- **Module 4 - Prototyping**: At this stage students should propose a solution to the selected problem (prototype). Each Design Thinking team (teamwork), must develop a solution that must be justified and agreed upon. Once the solution is designed it will be tested in one of the serious games available to support the proposed problems.
- **Module 5 - Testing and evaluation**: Finally, students begin to highlight what's working and fix what's failing. The goal here is to view this revision process as an experiment full of iterations, where every mistake takes them closer to success. As they share what they have made, the feedback they receive will be key to the revision process. At this stage students should evaluate how their solution works and how it could be improved. To do this, they must interact with the serious game by modifying values or patterns. Once possible failures or improvements have been detected, they should return to the stage 2 or 3, depending on the scope of the modification, to adapt the solution appropriately.

Each of the five modules will contain Learning Units (LU) that will correspond to concrete Learning Outcomes (LO) in a type of:

- **Knowledge:** the learner will gain knowledge with specific relevance to subject of the Learning Unit
- **Skills:** The learner will be able to demonstrate skills and the ability to use theory in practical issues related to subject of the Learning Unit
- **Competencies:** use a group of skills to perform as task, as well as asses and evaluate possible risks in the company.



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