

Intellectual Output No 2- Summary

Advanced manufacturing Curriculum



vetriangle
acting together

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Promotion of WBL via Vocational Education Training Triangle

VETriangle

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1. INTRODUCTION

This intellectual output will focus on the description of a methodology to design and define new curriculums to cover skill gaps detected in the labor markets.

The dizzying speed at which technology is evolving at all levels is well known. The requirements needed to access to many jobs are also changing very fast. Consequently, the same speed is needed to generate new curriculums to ensure the adequate training for those jobs.

This document describes a "universal" methodology to detect competencies and skills that are not included in the current training programs and to generate new curriculas that respond to those needs. The term "universal" has been used due to the adaptability of the methodology to any specialty, country, region, productive sector and level. When designing new curriculums, the methodology developed prioritizes DUAL training.

Multiple sources have been used to feed this Intellectual Output. On the one hand, the Intellectual Output 01 "Capacity Building for Developing VETriangle" where the roll of different organisms from VETRIANGLE consortium's partners countries involved in the DUAL training have been described. On the other hand, many researches and reports carried out by numerous organizations at European level describing methodologies for the detection and definition of new skills hve been referred, especially the Cedefop reports.

Finally, as an illustrative example of the designed methodology the steps followed in Miguel ALTUNA LHII (Spain) to create the curriculum "advance manufacturing" are described. In turn, the other partners have carried out an exercise in applying the method for defining different curricula in each country.

The methodology to create a specific curriculum consists of 4 phases or stages:

- 0) Pre-phase: Contextualization
- 1) Skill needs analysis
- 2) Contrast & Gap Definition
- 3) Design of Specifications for new curricula

It is important to underline that the process should be carried out over and over again, every time that new skills are demanded. In this context, the methodology must include a surveillance system in order to be updated concerning the labor market demands and needs, even to foreseen those demands. The surveillance systems will lead the organization to enter in the described loop every time that the need of new curriculums are detected.

2. STAGE 0.- PRE-PHASE: Contextualization

Before starting to develop this methodology (strategy), it is very important, first, to contextualize the program or studies that we are looking for. To do this, it will be necessary to specify some crucial aspects, such as:

- PROGRAM (understood as study field or specialty)
- SECTOR
- LEVEL

For those programs where previous studies are needed in order to assure the acquisition of the competences, it will also be necessary to establish, for each case, what are the requirements to access such program, i.e. the access conditions that a person must fulfil to attend the program.

3. STAGE 1: SKILL NEEDS ANALYSIS

The Skill Need Analysis is one of the most important and therefore complex phases of the process.. In this first stage, the objective is to obtain and collect information from different sources in order to detect new demands coming from industry. These information will be related to the sector and programs selected in the pre-phase.

4. STAGE 2: CONTRAST and GAP DEFINITION

After collecting information from different stakeholders, the second phase consists on organize and filter all the gathered information to define the more detailed as possible the objective skills and to contrast them with the current curricula. From this comparison those needed skills that are not covered in any curriculum will be discovered.

Different methods can be used to carry out the contrast step. In this section a simple and easy using method is proposed. A matrix comparing the current skills covered by different curriculums versus the new needed skills gathered in phase 2 is used.

TABLE 1 : MATRIX EXAMPLE

Competences covered with current programs	Program Name [1]			Program Name [2]								Degree of compliance
	CU 1: XXXX L5P	CU 2: XXXX L5P	CU 3: XXXX L5P									
Needed skills	L 5	L 5	L5									
Skill 1	100%											100%
Skill 2		80%										80%
Skill 3												0%

In the example [TABLE 1](#), the competences covered by current programs will be placed horizontally, at the top of the matrix. These *competences* will be classified by different competency units (CU). In the matrix different competence units from different programs are listed in order to let the user compare *learning outcomes* from different programs at the same time.

The needed skills, instead, are located vertically, on the left side of the matrix, the needed skills will be those obtained in stage 1, information obtained through different stakeholders.

When comparing the Competence Units covered by current programs with the needed skills, there is the possibility of only a percentage of the needed skills are covered by any of the existing Competence Units. In those cases, those percentages must be noted on the matrix. It is possible to assets a minimum percentage, as example 75% in order to consider that the needed skills are covered enough by the UCs. If this perc is not reached, it would mean that extra learning outcomes (and the related contents) are needed in the new curricula that will be developed.

On the other hand, if a 75% of the needed skills are covered it would be considered that those skills are covered enough by the current programs.

Once the matrix is completely fulfilled, the user will have useful information about:

- Which of the current UCs are useful for the new curriculum
- Which skill must be included in the new UCs

5. STAGE 3: DEFINITION OF SPECIFIC CURRICULUMS

In this stage the specifications of a new curriculum that covers the detected gaps will be described.

Two main pillars are taken into account:

- Program outputs (as result of the stage 02)
- Curriculum definition: Modules, contents, credit hours

For the development of a curriculum, then, we show the structure that should be carried out and how each section should be written. It is very important to carry out the guidelines of the template that we raise very conscientiously.

The document called “02 Procedure_to_Design_Specializations_Programs_and_Curriculums” describes briefly the characteristics of the different sections that form a curriculum. Although the sections of the doceument may vary from one country to another, the different elements that are described should appear somewhere in all the curriculums. Being aware that the *curriculums* are official documents linked with national policies, we use “**Specialization programs**” to appoint new programs that may not be included in official curriculums.

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