



**DUALMON**  
Strengthening capacities for the  
implementation of dual education  
in Montenegro Higher Education



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# DUALMON

## EXTERNAL EVALUATION REPORT

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# 1 Project Information

Project Acronym: DUALMON

Project Name: Strengthening capacities for the implementation of dual education in Montenegro higher education

Project number: 617392-EPP-1-2020-1-RS-EPPKA2-CBHE-SP

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- University of Novi Sad & UNS
- University of Montenegro & UOM
- FH JOANNEUM Gesellschaft mbH & FHJ
- ACADEMIA DRUZBA ZA STORITVE d.o.o., OE Višja strokovna šola Academia Maribor & ACADEMIA
- Ministry of Education & MOE
- Chamber of Economy Montenegro & CEM
- Crnogorska plovidba AD Kotor, Skaljari bb, 85330 Kotor, Crna Gora & CP
- Voli Trade d.o.o. & VT
- Roaming Networks d.o.o. & RN
- HOTELS GROUP MONTENEGRO STARS & HGMS
- Agency for Control and Quality Assurance of Higher Education & ACQAHE
- CRNOGORSKI TELEKOM a.d. Podgorica & CT

## 2 Introduction

This section of the report introduces the bases on which a dual educational model is built and the key ideas that must be observed in order to develop it appropriately to the objectives pursued. The criteria used for this assessment and subsequent recommendations are largely based on what is presented in this section. It is, therefore, an essential section to understand the result of the evaluation and its conclusions and should not be understood as a minor complement to the report but as a framework that will give meaning to the result and conclusions.

The first principle of dual education is the recognition of the company being a special learning space where new knowledge is generated. Dual education model considers the company as a learning environment together with the university and not as an option that enriches the learning process developed at the high education institution.

Dual education is based on the principle of complementarity of learning in an academic and a professional environment, and turns the student into an apprentice who is studying. The university and company/organisation are both responsible for the apprentice's training, assessment and monitoring, and work closely together to offer and develop a training project that guarantees the achievement of the required competencies.

Creating a dual higher education model requires that higher education institutions and companies establish a partnership and co-ownership of training through the organisation of a common training project proposal. To this end, the DHE model establish an "interstage" system between the work system and the training system, which is capable of articulating and providing feedback on in-company learning and training at university. Experimental knowledge (activities that students must develop in a work situation) and tacit knowledge (organization of the curriculum of higher education institutions) are integrated to relate, coordinate and evaluate them by the two agents responsible for training: the higher education institution and the company. It is in this dimension that the margin of distance between "traditional" internships and DHE becomes most evident.

Dual education is a form of training that brings three actors together: the student, the university and the company. According to Geay (1998), it is the interaction of a priori two contradictory types of logic: the logic of transmission of knowledge from the training center and the logic of production of the company. The integration of these two logics cannot be done by simple juxtaposition of periods of dominance. In this respect, dual education is not a simple model; it requires the construction of a systematic suitable relationship between the university and the company. It is not merely alternating between theory and practice, it involves building a system in which the relationships are bidirectional.

DHE model favours the professionalization of studies through theoretical/practical articulation throughout the academic year, so that students are able to pursue the activity in their professional environment and which goes beyond the practice as understood in classical or traditional training. "The relationship between knowledge and competence is not a simple cause and effect relation, it depends on the commitment of

the person in action. It is through a confrontation with the world as it is that the individual builds its skills, mobilizing its personality, its knowledge in use and the capabilities of formalization. Therefore, activity and competition are inseparable and articulation of various educational spaces of the school and the world of work is necessary" (Malglaise, 1993: 44).

From a pedagogical point of view, the dual model changes the way of learning and teaching with a strong interaction between practical training in companies and theoretical learning. The pedagogy in dual learning is based on two main processes: a constant integration of work experience and academic content; and a constant reflection.

In dual education this is achieved through devices establishing pedagogical and inclusive reflection (specific teaching sequences), so that students can determine links between training in the company and the knowledge they learn in the higher education institution. These spaces provided for educational reflection are essential for students to group-share experiences undergone in the context of work via reflection on practice.

Given this pedagogical and educational dimension, a series of relationships between the actors involved in the training are established. In these relationships between actors in dual education, double mentoring arises. Indeed, the student is accompanied throughout its training path by both the company and academic tutors. Double mentoring appears to ensure and regulate the student's progress. In this regard, the company tutor plays a key role in the workplace for its ability to organize the learning and define the objectives; the academic tutor is in charge of relations with the tutor of the company to adjust the training process of the student. Success lies in being able to integrate and combine the different learning from the higher education institution and company. They must visualize the contribution of the higher education institution and company in skills development throughout the years of learning. In turn, the students should be able to explain their areas for improvement and propose specific actions for their personal development.

Since there is no "one size fits all" model, a potential transfer of dual study programs to interested countries needs to be adapted to the particular national and local context. It can be noted there are three key pillars for the promotion and consolidation of dual in higher education:

- Educational and labour legislation and financial regulation to support their development;
- Training structure with an appropriate pedagogical model and adapted resources;
- Companies network to accept and to support the training of students.

### 3 Project Overview and context for evaluation.

The link between labour market and Higher Education Institutions (HEI) in Montenegro is still weak. On the one hand, companies has low level of trust in HEI as serious partner for



solving their technological problems, their need for innovation or their role in the creation of skill and knowledgeable graduates, who are fit for employment.

On the other hand, Universities are not recognizing companies as those who can contribute to the modernization of study programs and who could help adopting them to the future needs of society.

At the same time, the unemployment rate in Montenegro is still high, with above 14% in 2019, according to Monstat (Agency for Statistics in Montenegro).

Practical work (internships, project work, etc.) is not well organized across most study programs. Except in rare good practices, which are not systematically developed, work placement of students during studies is not institutionalized. Consequently, graduates' education is mostly out-dated and/or too much theoretical, not job relevant. Employees do not recognize graduates' competences in most of the cases.

In order to overcome these problems, the project proposes Dual Higher Education (DHE) for enabling students to acquire more relevant knowledge and skills by combining classical traditional teaching/learning at universities with knowledge and skills acquired at the work place (work-based learning). As a consequence, this will provide them with competences and skills that are more in line with needs of employers and will significantly increase employability of the graduates and decrease investment for trainings of young professionals on the employers' side. In the same time reputation of HE will benefit from a larger number of graduates that find and keep jobs in fields that are relevant to their fields of study.

The project develops a model for DHE in Montenegro based on the experiences of other established models in Europe, analyse and propose the basis for a legal framework for implementing the model and develops several pilot projects for implementing the model, assess the results and propose improvements and recommendations for an larger development in Montenegro.

### 3.1 Aims and objectives of the project

The overall aims of the project are:

- Improvement of the competencies of higher education graduates in Montenegro, according to the needs of employers,
- Increase motivation to study as well as to improve the employability of graduate students,
- Enable students from lower income families to access higher education, and
- Improvement of legal framework and accreditation standards in Montenegro in order to adapt to dual education.

In order to achieve these aims, the project needs to realize the following specific objectives:

- Define the specific needs of companies in various industrial sectors and find companies that are willing to participate in pilot implementation of dual higher education during the project;



- To develop a generic Dual Higher Education Model (DUALMON model) to support different needs and interests of employers, higher education institutions (HEIs) and students in different industrial and business sectors and to provide recommendations to HEIs for implementation of Dual Higher Education;
- To test the specific dual models generated from the developed generic DUALMON model, by realizing their pilot implementations during the project and to analyse achieved results; and
- To propose changes to legislation/regulations to implement dual higher education in Montenegro.

## 4 Procedures and evaluation methodology

### 4.1 Evaluation objective

According to work package 5, quality control, deliverable 5.3 is “external evaluation”.

This evaluation seeks to evaluate the quality of the developed generic and specific dual models and legal framework, based on the project deliverables.

The report will be publicly available on website of the project. On the basis of the report, consortium will correct the deliverables if necessary.

### 4.2 Evaluation methodology

The evaluation methodology is based in on the content analysis of the information and deliverables provided by DUALMON consortium in their [website](#) and drive folders. A detailed examination of all the documents available has been carried out. The main documents, containing the most relevant information for this evaluation report are:

- 1.1 Review of best practices and experiences in DHE
- 1.3 Report on Survey of companies needs for Dual Higher Education in Montenegro
- 2.1 Generic and flexible MDHE for Montenegro
- 2.3 Discussion Forum on the proposed DUALMON model
- 3.2 Amendments to the Labour Law
- 3.5 Recommendations to HEIs in Montenegro on how to implement DHE
- 4.1.1 Specific model - Faculty of Maritime Studies Kotor
- 4.1.2 Specific model - Faculty of Electrical Engineering Electrical Engineering
- 4.1.3 Specific model - Faculty of Economics
- 4.1.4 Specific model - Faculty of Tourism and Hotel Management



4.6 Toolkit for implementation and documentation of dual practice-integrated higher education programmes\_final version

5 1 Plan for project quality control

Other documents could not be assessed by this evaluator as there were only version in Montenegrin language. The relevant document for this evaluation that couldn't be analysed because of this are:

3.1 Amendments to the law on higher education

3.4 Discussion forum on draft proposals of amendments

4.3.1 Template Agreement with companies

4.3.2 Template Learning agreement with student

4.3.3 Agreement, company Crnogorska plovdba

4.3.4 Agreement, company Uhura Solutions

4.3.5 Agreement, company BIXBIT

4.3.6 Agreement, company Fleka

4.3.7 Agreements with companies Addikko, ETG, Kuca hemije, Logate, Neregelia, Voli trade

By studying the content provided by the consortium, the external evaluation aim to derive valuable insights into the project's compliance with its objectives, the extent to which it meet predefined standards and criteria, and its overall contribution to the intended outcomes. In particular, the quality of the developed generic and specific dual models and legal framework, are evaluated The findings derived from this content analysis form the basis of the assessment and recommendations presented in the final section of this external evaluation report.

## 4.3 Limitations

It is important to note that the evaluation is based only on the documents available in English. There hasn't been the opportunity of having other ways of interaction with project members, like meetings or interviews. This is a serious limitation in the case of the evaluation of the quality of the legal framework, as the main documents are only available in Montenegrin. However, it has been possible to identify some basic aspects to be able to issue a minimum reasoned evaluation.

The level of achievement of some of the overall aims of the project can't be derived from the information provided, like the level of improvement of the competencies of higher education graduates according to the needs of employers, the improvement on the motivation to study or the employability improvement of graduate students.

## 5 Generic Dual Higher Education Model (DUALMON model)

This work has been developed as work package 2 in the project.

The Generic Dual Higher Education Model (DUALMON model) is a comprehensive framework within which HEIs in Montenegro can develop their specific dual programs. The model synthesises the needs of the different stakeholders, HEIs, companies and students. The model is presented as a set of general guidelines with a flexible and generic approach, letting each specific model the capacity of adapting the different elements involved as well as the possibility of introducing those that the specificity of the program and companies particularities might suggest.

The model was built on the basis of different inputs. First, the experiences and recommendations from the programs developed in the partner countries, as well as other European examples. The knowledge of these experiences was acquired as part of the WP1 through the preparation on the report [1.1 Review of best practices and experiences in DHE](#), that is part of the WP1 deliverables, and the study visits done to Slovenia, Austria and Serbia.

Second, the analysis of Montenegro companies' needs for DHE across different industry fields and the discussion of the results of the survey with partner's members and representatives of different stakeholders (activity 1.3 of WP1). The results are presented in the report [1.3 Report on survey of companies needs for Dual Higher Education in Montenegro](#) and gives highly valuable information for helping the project to develop a significant model for DHE.

Other input worth mentioning as a basis for the motivation and development of the project is the *Draft strategy of higher education of Montenegro for the period 2021-2025*, mentioned and referred to in different parts of the documents.

The model is presented and described in the report [D2.1 Generic Dual Higher Education Model \(DUALMON model\)](#). The evaluation is based on the document in the website of the project and corresponds to the version V.3.0, dated on 16/12/2021.

The methodology used to define the model has two main steps: the definition of the specifications for a national legal framework and the specification of the generic and flexible model for implementing DHE in Montenegro.

### 5.1 Specifications for a national legal framework for dual higher education (DHE).

This part has the aim of specifying a possible decision space for legislation of DHE in Montenegro. In other words, it aims to identify what are the factor to be taken into account during specification of the legislation for DHE. The results will be used in WP3, *Creation of Legal and Quality Assurance Conditions for Implementation of Dual Higher Education*.

The report identifies 15 factors to be addressed. For each of the 15 factors it proposes alternatives, aspects or recommendations and describes what should be specified in the legal framework for each case. The 15 factors and alternatives have been determined based on the analysis of the legislation of project partners' countries and some other EU countries. The information is summarised in a table format.

## 5.2 Specification of the generic and flexible model for implementing DHE in Montenegro's HEIs and companies (GF-MDHE).

The generic part of the model provides the basis of the model and ensures the homogeneity of the most important features of MDHE in Montenegro. It contains compulsory elements and elective elements that should be determined in the flexible model. The flexible part is the application of the generic model to each specific program, allowing the adaptation and particularization to the specificities of the program, HEI and companies profile.

Similar to the first step of the development of the specifications of the legal framework, the Generic Model of Dual higher Education (GF-MDHE) is described on the basis of a table that synthetizes a list of 38 factors classified by different attributes of the model, indicating alternatives, aspects or recommendations for each factor, as well as the description of what should be specified in each case. This constitutes the GF-MDHE.

For each program the values of the attributes described should be chosen according the specific need of the HEIs, companies and students. If needed, new attributes can be added for each program as well as discard those that are irrelevant for the program. This constitutes what is called the specific model for DHE.

The 38 factors are classified according to the following sections:

- Geographical and economic issues
- Study program
- Contracts
- Working time
- Selection of candidates
- Tutorship
- Teaching-learning process
- Active educational design
- Assessment of dual students

The model identifies “working time” as “one of the most important factors”, giving special attention to this section by presenting up to five different examples of application. These are presented in the model as parallel –two examples– or sequential –three examples– working, teaching and learning time schedules. For each of the two possibilities, it presents different ways of organizing the alternation between work and academia. These examples must be taken as a guide and they can be modified as needed or, even, create a new model.



In all of the proposed schedules, the students do not have any working time during the first year of the degree program.

For the purpose of the evaluation, the models proposed are summarised and presented in the following tables, emphasizing the distribution of time in the academia and in the work environments, without giving any detail of the distribution between teaching and study time for the student. The information is not given anywhere in terms of ECTS.

### 5.2.1 Parallel schedule No.1

1st year of studies, only academia

From semester 3 to 6, distribution of daily hours throughout the week:

	Monday [hours/day]	Tuesday [hours/day]	Wednesday [hours/day]	Thursday [hours/day]	Friday [hours/day]
Academia	3	3	3	3	0
Work	5	5	5	5	8

Repeats during 15 week each semester

Plus 8 hours/day at work during July

### 5.2.2 Parallel schedule No.2

1st year of studies, only academia

From semester 3 to 6, weekly distribution of hours throughout the semester:

	7 weeks (1st half of sem.) [hours/week]	9/8 weeks (2nd half of sem.) [hours/week]
Academia	40	20 (half day)
Work	0	20 (half day)

Repeats for each semester

Plus 8 hours /day at work during July

### 5.2.3 Sequential schedule No.1

1st year of studies, only academia

From semester 3 to 6, weekly distribution of hours throughout the semester:

15 weeks (1st semester)	6 weeks (end of 1st sem.)
15 weeks (2nd semester)	5 weeks (end of 2nd sem.)



	[hours/week]	[hours/week]
<b>Academia</b>	40	0
<b>Work</b>	0	25 Monday to Friday (1st sem.) 40 Monday to Friday (2nd sem.)

#### 5.2.4 Sequential schedule No.2

1st year of studies, only academia

From semester 3 to 6, weekly distribution of hours throughout the semester:

	7 weeks (1st half of sem.) [hours/week]	9/8 weeks (2nd half of sem.) [hours/week]
<b>Academia</b>	40	24 from Monday to Wednesday
<b>Work</b>	0	16 from Thursday to Friday

Repeats for each semester

Plus 8 hours /day at work during July and two weeks of August. Total 6 weeks.

#### 5.2.5 Sequential schedule No.3

In this model, students stay in academia during the until the second half of the 6th and last semester of studies.

	15 weeks (from 1st to 5th sem. + first 7 weeks of 6th sem.) [hours/week]	8 weeks (end of 6th sem.) + 5 following weeks [hours/week]
<b>Academia</b>	40	0
<b>Work</b>	0	40 (8 weeks) + 20 (5 weeks) Monday to Friday

#### 5.2.6 Summary of distribution of time between academia and work

Table summarises for each of the proposed models the distribution of ours at work and the rest of time dedicated to teaching and studying.

Schedule model	Year	Academia	Work	Total
<b>Parallel No. 1</b>	2nd	1140	780	1920
	3rd	1140	780	1920



<b>Parallel No. 2</b>	2nd	1420	500	1920
	3rd	1420	500	1920
<b>Sequential No. 1</b>	2nd	1405	515	1920
	3rd	1405	515	1920
<b>Sequential No. 2</b>	2nd	1440	480	1920
	3rd	1440	480	1920
<b>Sequential No. 3</b>	3rd	1340	420	1760

The document presents in the appendix the application of the model in two partner institutions, as an example of how to apply the model to a particular institution:

- The Faculty of Economics University of Montenegro
- The Faculty of Electrical Engineering, University of Montenegro, study program Electronics, Telecommunications and Computer Engineering, module Computer Engineering.

The specific model described as example in this part of the document differs from the model described further as part of the pilot implementations carried out in four of the partner project institutions.

## 6 Pilot testing of the generic DUALMON model

According to the plan for WP4, the project includes 4 reports describing the concepts of specific dual model developed for four different degree programs, each one corresponding to one Faculty of each of the participating faculties at University of Montenegro. The following table summarises the programs and faculties

Faculty	Program
Faculty of Marine Studies Kotor	Marine Engineering, module Inspection of Marine System
Faculty of Electrical Engineering	Electronics, Telecommunications and Computer Engineering, module Computer Engineering
Faculty of Economics	Economics, module Microeconomics
Faculty of Tourism and Hotel Management	Tourism and Hotel Management, module Hotel Management and International Hotel Industry

One of the reports, the one corresponding to the Faculty of Electrical Engineering, has not been assessed as only Montenegrin language version is available. In any case, it seems to propose the same specifications as for the other three cases.

All reviewed reports has the same content structure, organized in three sections:

- Motivation for the implementation of a specific model of dual education in the specific program
- Concept of specific model of dual education for the specific program
- Legal framework for the implementation of the dual education model at the specific Faculty.

## 6.1 Motivation

The motivations are based on the same evidences in all cases, although they are presented on the framework of each specific program. These evidences are, basically, the “Draft Strategy of Higher Education of Montenegro for the period 2021-2025”, and the report “Mischance of the labour market and the education system in Montenegro”, prepared by the Montenegrin Employers association in 2016.

## 6.2 Concept of specific model

The section related with the concept, provides a detailed description of the specific model that will be implemented in each Faculty. The sections presents the information on:

- Program selected for a pilot testing of the model.
- Module selected for implementation of the model.
- Selected model, according the proposed models in document “2.1 Generic and flexible MDHE for Montenegro”.
- Number of students participating.
- Prerequisites for students to be eligible for dual program.
- Procedure for selecting the participating students.
- Procedure for selecting learning outcomes.
- Monitoring of students’ progress.
- Evaluation methodology for practical work.

## 6.3 Legal framework

Last section refers to the legal framework form the development of the dual education. This section is important for the project outcomes as, at present, the Law on Higher Education in Montenegro does not recognize the possibility of dual higher education. Hence, one of the goals of the project is to identify decision-making areas that will be used by policy makers in Montenegro to propose a law on higher education, which would provide a framework for the implementation of dual education in higher education



institutions, and define mutual rights and obligations of students, higher education institutions and employers.

In this section the specification under which the model will be developed are presented. This specifications include:

- Name of the higher education institution where the dual education project is implemented
- The process of selecting students who will have the opportunity to participate in a dual education pilot project
- Rights and obligations of participants (Faculty, companies and students) in the pilot project
- Plan of the implementation of the curriculum by the employer
- Financial aspects of student admission by employers
- Verification of realized learning outcomes through internship
- Change of the employer
- Recommendation for future development of legal framework on dual higher education

## 6.4 Summary of pilot testing model

The following table summarises the common features of the model proposed. Most of them are common for all programs. The differences, if any, are shown.

Total ECTS for degree program	180 ECTS, 6 semester, 3 year
EQF of education program	7 <sup>th</sup> , bachelor
Total time in company throughout the complete degree program	240 hours
Model for work in company	“Sequential 3”. End of 6 <sup>th</sup> semester (end of 3 <sup>rd</sup> year), 8 h/day for 4 weeks in May and 4 h/day during 4 weeks in June
Selection of the students who will have the opportunity to participate in dual program	Professor of the subjects involved in the module are in charge of selection, according objective criteria.
Working plan	Prepared by academic mentor and company mentor
Monitoring of students	Double mentoring: professor of related subject from HEI and mentor in the company.
Payment	Companies don't need to pay students for their work in the company.



Assessment	Included as part of final exam of the specific subject to which the project in the company is related, or as part of whole final exam.
Certificate	Company issues a certificate to the student upon completion of the program.
Change of company	Change is allowed in special and accepted cases.
Agreements	Agreement on DHE model between HEI and company.  Agreement on work-based learning between employer and student.

## 6.5 Document on recommendations derived from pilot

Activity 3.5 of WP3 consist on summarizing in a report the findings of pilot tests of the specific DHEM to provide recommendations and guidelines to HEIs in Montenegro on how to implement DHE.

This report describes the concept of specific DHEM developed in the Faculty of Marine Studies Kotor, and in the Faculty of Economics.

There is some information included in this report that is not clearly included in the pilot testing reports and that are of importance for the purpose of this evaluation report.

One is the ECTS that are obtained in each case for the work-based learning acquired in the companies, as part of the dual model.

In the case of Marine Engineering, module Inspection of Marine System, which is a 180 ECTS program, the students receive 24 ECTS. This means about 13,3% of the total credits.

In the case of Economics, module Microeconomics, which is a 180 ECTS program, the students receive 30 ECTS. This means about 16,67% of the total credits.

The other important information included in this report is the process followed in the framework of the project by the Working Group for Amendments to the Law on Higher Education in Montenegro. The report describes all the work performed by this group that reached the point of preparing a Draft Law on Higher Education. Unfortunately, changes in the government of Montenegro have prevented the process from being completed and the law still does not recognize dual education.

The document defines the relations between employer and HEI and between employer and student. The “agreement on DHEM” defines the relations between employer and HEI and the “agreement on work-based learning” defines the relations between employer and student. The document describes all the issues that each of the agreements should include and clearly state.

## 7 Evaluation results and recommendations

Based on the analysis of the documentation provided and on the experience on dual higher education of the evaluator, this section presents the results of the content analysis and the recommendations for further consideration and reflection.

### 7.1 Aims and objective of the project

The project clearly defines the aims and objectives for developing dual education in higher institutions in Montenegro. They are well justified and structured. However, the results of the work carried out to achieve these aims generate important doubts regarding their effectiveness. These aspects are then discussed and recommendations for improvement are made taking into account the initial aims of the project

The overall aims of the project are:

- Improvement of the competencies of higher education graduates in Montenegro, according to the needs of employers,
- Increase motivation to study as well as to improve the employability of graduate students,
- Enable students from lower income families to access higher education, and
- Improvement of legal framework and accreditation standards in Montenegro in order to adapt to dual education.

In order to achieve these aims, the project needs to realize the following specific objectives:

- Define the specific needs of companies in various industrial sectors and find companies that are willing to participate in pilot implementation of dual higher education during the project;
- To develop a generic Dual Higher Education Model (DUALMON model) to support different needs and interests of employers, higher education institutions (HEIs) and students in different industrial and business sectors and to provide recommendations to HEIs for implementation of Dual Higher Education;
- To test the specific dual models generated from the developed generic DUALMON model, by realizing their pilot implementations during the project and to analyse achieved results; and
- To propose changes to legislation/regulations to implement dual higher education in Montenegro.

## 7.2 Dual Higher Education Model

### 7.2.1 General comments

The proposed generic dual higher education model (GF-MDHE) considers the most relevant aspects to be taken into account when defining and implementing a dual training model.

It proposes a model that defines a “generic model of DHE” (GF-MDHE) with a collection of aspects to be defined, and a proposal of possible alternatives that will be specified for each program according to the specificities of the program itself and the productive environment and companies that can participate in the program. This specification to a particular program is what is called the “specific model of DHE”.

The GF-MDHE opens opportunities and alternatives for developing DHE. However, not all the alternatives proposed can be considered to be a dual model of education, for instance, some alternatives for the “working time”. On the other hand, some important aspects, like the pedagogical model, are not sufficiently developed.

The “specific model of DHE” chosen for implementing the pilot testing fall in this category of alternatives that can’t be considered as truly “dual” and rather constitute a traditional model of company internship at the end of the complete degree study programme. In particular, the “working time” proposed, “sequential 3” in the model, can’t be considered as dual.

### 7.2.2 Alternance model: “working time”

As explained in the introduction of this report, dual education is based on considering the companies a learning environment, at the same level and importance as the HEI in terms of the significance of the acquisition of competences and knowledge. This must have a translation in the organization of the educational project for the student. The proposed “specific model of DHE” considers the participation of the company only at the end of the 6<sup>th</sup>, and last, semester, “*after gaining the theoretical knowledge planned by all courses within study module*”<sup>1</sup>. This means that companies are considered as places where knowledge acquired in HEI is put into practice:

*“[...] is represented in the last semester of basic academic studies, which ensures that the project includes those students who have already acquired theoretical knowledge, necessary to successfully adapt to the work environment within the company and solve real business problems and challenges. In this way, students can apply the acquired theoretical knowledge and upgrade it with practical skills gained through the process of dual education”<sup>2</sup>*

The proposed MDHE is not based on a repeated succession of theoretical and practical phases and continuous reflection, but rather in a complete phase of theoretical

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<sup>1</sup> Deliverables 4.1.1, 4.1.3 and 4.1.4 introducing the Specific Model for each program

<sup>2</sup> Deliverables 4.1.1, 4.1.3 and 4.1.4 introducing the Specific Model for each program

knowledge acquisition that extends to almost the complete program and a short practical phase at the end of the program.

The practical phase is limited to the usual scope of a professional internship both in terms of time and in terms of specification of the content.

Therefore, the acquisition of curricular defined competences takes place mostly at HEI, rather than at the two learning locations.

The workload for the students in this model is very tolerable for the students and doesn't need any schedule adaptation.

### 7.2.3 Participation of companies in the project

The complete program is presented from an academic point of view, centred on the fulfilment of the academic requirements of the program. The participation of the companies is restricted to the placement of the student in the company and the participation of the company mentor in the definition of the work program.

The participation of the company in the project should be wider than this and must include the possibility of adapting target competencies and learning outcomes. In this sense, the lists of learning outcomes suggested in the documents for the different programs are those expected for an academic subject and avoiding any reference to professional competencies that can be developed in the company environment. It is very important to keep in mind for constructing a dual model that the professionalization of students is one of its major objective. This must be clearly reflected on the target competencies defined for the educational programme.

The participation of the company should include a more extended period, more distributed throughout the complete program. It is also important that the students can get a broad knowledge of the activities in the company, beyond the particularities of the specific program, being able to participate in multidisciplinary projects in a real-life setting. Having the opportunity of knowing different departments in the company will help them to better understand the complexity of the processes developed and to give sense to their contribution.

### 7.2.4 Program curricula adaptation

The development of a dual model must pursue the integrations of the activity at the HEI and at the company. Therefore, for a proper development of a dual model, it is necessary to do some adaptation of the curricula of the program. The mere addition of some internship in a specific moment of the program –linked to specific subjects, in this case– is not enough and can't, by itself, guarantee a dual model. Rather than adapting the model to an unchanged degree program, this has to be properly adapted to enable the systematic of a dual educational program.

### 7.2.5 Pedagogical model

In dual training, the apprentice/student integrates the knowledge acquired in an academic situation with that learned in a professional situation. It needs to be constructed in such a way that the two training periods are coherent with each other, while attention must also be paid to pedagogical engineering, which is the key element that relates the three main actors in the process: the apprentice/student, the academic or university tutor and company tutor.

It is highly recommended to go deeper in the definition of a pedagogical model for the complete program, not only for the time of the internship. Dual education requires a pedagogy based on the experience and the reflection of these experiences and the knowledge acquired. The adoption of active learning methodologies in a wide extension throughout the program is highly recommended.

### 7.2.6 Academy-Company balance

It is important for a dual model that the time at HEI and the time at the company is somehow balanced. The time and activity in the company must be significant in the context of the educational progress of the student during the complete program. Thus, it is recommended to establish the percentage of credits, included in the study plan, that are developed in the collaborating entity in ECTS units.

### 7.2.7 Selection of students

The proposed GF-MDHE is flexible enough in many aspects of organization to accommodate the different realities that may occur according to the different training programs, geographical location of the collaborating companies or other considerations. On the other hand, in other aspects, such as the selection of students who end up participating in dual pathways or with regard to apprentice assessment, the model is highly regulatory and very focused on the academic perspective of traditional studies.

In this sense, the specific model proposes a preselection by the professors involved in some specific subjects in the HEI of the potential students that can be eligible for the companies. It is reasonable that the HEI verifies that the students fulfil the basic requirements necessary for participating in the dual itinerary, like having completed some basic subjects. But it is recommended to delegate to the company the complete process of selecting the students that the company will host.

### 7.2.8 Evaluation

The evaluation of the projects in the company requires also a proper adaptation to the general concept of dual education. This must be reflected on the methodology for the evaluation and on the participation of the company in the assessment. There is no discussion that the main responsibility for the evaluation is the HEI, usually personified through the academic mentor. This is not in contradiction with including the company,



usually personified through the company mentor, in the assessment of the acquired knowledge and competencies of the student.

The proposed specific model establish the evaluation as part of the exams of some subjects to which the work in the company is related. It is recommended to introduce other assessment methodologies that establishes clear evaluation criteria for the work placements. It is desirable that the same academic mentor participates in the evaluation of the complete progress of one student, rather than splitting the evaluation in different subjects, as part of their exams. The establishment of clear evaluation criteria linked to homogeneous rubrics that must be published in advance is highly recommended, together with the definition of the company mentor participation in the evaluation.

It is also recommended to include the evidences for the assessment in this definition as they are an important part in any accreditation process.

### 7.2.9 Company Mentor

For each student, companies should designate a company mentor that will be in charge of making a learning plan for the student and monitor the student's progress during the internship.

The model gives a significant importance to the requirements for a mentor to be elected, what is eventually done by a professor in the HEI. The list of requirements are highly demanding:

- *List of activities of employers who can participate in the implementation of the working tasks covered by the selected study module.*
- *Specification of general obligations to be fulfilled by the employer in order to achieve learning through work on the study module (e.g. harmonization of work tasks within a specific employer with the program and subjects covered by HEI, occasional meetings of employer and academic mentor, HEI reporting on student work, way of presenting what has been learned, etc.).*
- *Competence of the mentor in terms of education (minimum 180 ECTS credits, etc.) and 2 years of work experience. The HEI should indicate how to check the competencies of the mentor with the employer (e.g. CV with professional achievements, interview with the teacher).*
- *A list of necessary equipment provided by the employer to the student.*

This requirements are so important for the model that it introduces the possibility of hiring an external person that fulfils the requirements in case the company does not any employee that meets these requirements.

It is reasonable that HEI validates the adequacy of the proposed company mentors and that they should meet some previously defined criteria. However, when a company doesn't have any employee who meets all the required criteria it might be more convenient not to hire somebody who hasn't any previous experience inside the company and choose somebody that can properly help the progress of the student in the knowledge of the company and its processes. This is important, especially, during the implementation of the dual model, while it is in the phase of pilot and evolution towards



a better defined model. The lack of some specific technical knowledge could be complemented by the academic tutor in this case. Of course this will need to be taken into account on the degree of implication of the company mentor in the evaluations of the student.

The establishment of some minimum training for the company mentors is highly recommended. This training must be focussed on the knowledge of the dual model and its basis, the procedures for implementing it, the rights and obligations of all actors involved in the process and some practical tools for helping them in their mentoring activities.

### 7.2.10 Student payment

The proposed model of DHEM establishes that during the piloting of the dual program, companies are not obliged to pay compensation to students for the time spent in the company. The project does not give clear information on what is the proposal for the model beyond the pilot stage.

The concept of “compensation for the time spent” is a misunderstanding of the role that students and companies play in a dual model. On the one hand, students must develop a significant work project that contributes to the acquisition of knowledge and competencies. But at the same time, students are contributing to the progress of the company. On the other hand, companies must invest in preparing the skilled professionals they need for their present and future development. Payment to students mustn't be seen as a compensation but rather as a fair deal between a worker and a company, both receiving a valuable input.

Students in dual program should be paid by the company for their work and contribution to the success of the company. This must be seen by companies as an investment rather than a cost. Preferably, the framework for regulating the relation between students and companies must be a work contract. In any case, while there is no specific regulation at state/regional level on this issue, it should be up to the university to set minimums. At no time should such a task be left to the students, at least not by negotiating the minimum wage. If there is no specific regulation defining the existence of a maximum, this could be negotiated by the student with the institution.

### 7.2.11 Results of pilot testing

Information on the quality of the results of the pilot testing like model and results upon completion of internships of students are missing. Students, academic and employee mentors surveys might be very valuable. This information is very important for evaluating the implemented model and assessing the degree of achievement of the proposed aim and objectives. The most important aspect to be assessed is the impact on the employability of recent graduates.

## 7.3 Legal Framework

This section has been only partially assessed as some of the document were only available in Montenegrin and couldn't be properly analysed.

First, it is important to say that the Law on Higher Education in Montenegro does not recognise the possibility of dual higher education. Work Package 3 of the project, Creation of Legal and Quality Assurance Conditions for Implementation of dual higher education, worked with the different stakeholders in Montenegro to create:

- amendments to the Law on Higher Education in Montenegro, creating a draft law on dual education,
- amendments to the Labour Law,
- amendments to the Accreditation Criteria.

The proposed amendments to the Law on Higher Education in Montenegro, couldn't be assessed by this evaluator as the document were only available in Montenegrin. In any case, the work has been prepared. Unfortunately, the results couldn't been implemented due to the political changes in Montenegro and the changes in the government during the development of the project.

### 7.3.1 Labour Law

The working group that was in charge of this activity (3.2), arrived to the conclusion “*that amendments to the labour law are not necessary for the implementation of dual education, because engagement of students in the companies during their dual education does not have any impact on their working status in relation to Labour Law.*”

### 7.3.2 Legal conditions for realisation of DHEM

The model identifies most of the key issues that must be taken into account for the development of a dual program.

### 7.3.3 Regulation for dual higher education

The definition of a general framework that defines the minimum requirements for a program to be considered as “dual” is paramount in any context. This framework should establish the concept of dual education so that it is clearly understood what can fit within this concept and can't be called dual. It should also establish the basic conditions and requirements under which dual models should develop. This is important in order to have a homogenous model that allow the collaboration and partnership among different universities.

As an example worth taking into account, the legal framework for dual higher education in Spain that establishes the requirements for a program to be called dual and the conditions under which it should be developed is presented below.



This framework establish that the official university degrees of Bachelor's and Master's degrees may include the Dual Mention, which involves a common training project that is complementary developed at the university center and in a collaborating entity, which may be a company, a social or union organization, an institution or an administration, under the supervision and training leadership of the university center, and whose objective is the adequate training of the students to improve their comprehensive training and improve their employability.

The percentage of credits (ECTS), contemplated in the study plan, that are developed in the collaborating entity (company, organization, institution or administration), will be:

1. Between 20 and 40 percent of the ECTS credits, in Degree titles.
2. Between 25 and 50 percent of the ECTS credits in Master's degrees.

The training activity developed dually at the university and the collaborating entity will alternate with a paid work activity.

Within the dual training activity, the basic skills and knowledge that are intended to be achieved will be defined, in a coordinated and complementary manner with the skills that are worked on during the academic time that the student spends at the university center, always keeping in mind the uniqueness of the study plan and the training project that is the Degree or Master in question.

Furthermore, the possibility of combining the training activity in the university center and in the collaborating entity (company, organization, institution and administration) must be ensured at all times.

The university and the collaborating entity in which the student develops part of his or her training through an employment contract must have previously signed a Framework Agreement for Educational Collaboration. This agreement will specify the training project, and will indicate the obligations of the parties that sign it, the mentoring and supervision mechanisms, the evaluation systems, and the rest of the conditions that are considered necessary for the correct implementation of the training project. common. In this sense, the student will have a tutor designated by the university and a tutor designated by the entity, company, organization, institution or administration, who must jointly supervise the development of the training project, under the leadership of the university tutor. The universities will guarantee the adequacy of the conditions for carrying out the activities framed in the contract and that convey the training development in the agreed entity.

Finally, the student who has chosen to take the Dual Mention within a Bachelor's or Master's degree course may, if he or she considers it appropriate, abandon it and return to the general itinerary as long as he or she has not exceeded half of the credits defined to obtain the Mention. Dual in the respective study plan.

#### 7.3.4 Accreditation

The accreditation of the dual programs is very important for the development, sustainability and quality assurance of the programs. As far as it is derived from the



documents, there aren't any specific accreditation procedure for dual programs. Moreover, it is perceived the accreditation of the present programs as a strong constraint in defining de specific model proposed for DHE. A proposal on the criteria for accreditation of dual programs is recommended in the framework of this project.

A basic scheme of accreditation should contain the following items:

1. Description, training objectives and justification of the degree
  - 1.1. Denomination
  - 1.2. Total number of ECTS credits
  - 1.3. Places available
  - 1.4. Justification of academic, scientific, professional and social interest
  - 1.5. Training objectives
2. Results of the training and learning process
3. Admission, recognition and mobility
4. Planning of teachings
  - 4.1. Basic structure of the dual specialization
  - 4.2. Training activities, teaching methodologies and evaluation systems
5. Academic and teaching support staff
6. Learning resources: materials and infrastructures, practices and services  
Implementation schedule
7. Internal quality assurance system

## 8 Conclusions

Aware of the importance that training of professionals prepared for the present and future challenges of society, companies and organizations has for the development of the country, the promoters of the project have made a proposal of great value to initiate a change in the educational model of higher education institutions towards a greater approach to the professional world.

In a country where, as explained in the documentation, there is hardly any tradition of internships in companies, the project proposal to develop a dual model is very ambitious.

Experience in other contexts and countries shows that a dual model can only be developed as a result of an evolutionary process of constant and gradual approximation.

A dual model requires a profound change in the culture of the different actors involved. On the one hand, academia must recognize that student training in higher education is not exclusive to universities and that academia is not the only place where knowledge and training can be achieved. It should be remembered that the third objective of the Bologna Declaration already points towards this direction when it establishes that *“credits could also be acquired in non-higher education contexts, including lifelong learning, provided they are recognised by receiving Universities concerned.”*

Accepting the company as a place of training is a first change that the academy must make. This implies the creation of mutual confidence and recognition that can only be



established through a permanent dialog between HEIs and companies. The project has opened this channel for assuring a significant and valuable communication.

On the other hand, companies must visualize their involvement in the training of future professionals as part of their objectives to which they must dedicate resources. Students should receive remuneration for their work in companies and this should be seen as part of their commitment and as an investment for the future, and not as a cost for which they should be compensated.

Finally, students must assume greater responsibility in the definition and development of their training projects, acquiring a more active role both in the definition of the program itself and in its execution, accepting a double role as students and workers in training.

The specific model proposed in the project cannot be qualified as properly dual but as a traditional model of internships in companies. However, the project is an important and necessary step to move in the right direction to achieve a true dual model, based on the principle of complementarity of learning in an academic and a professional environment, that turns the student into an apprentice who is studying. A model where the university and company are both responsible for the apprentice's training, assessment and monitoring, and work closely together to offer and develop a training project that guarantees the achievement of the required competencies. A model constructed in such a way that the two training periods are coherent with each other, while attention must also be paid to pedagogical engineering, which is the key element that relates the three main actors in the process: the apprentice/student, the academic or university tutor and company tutor.

Much of the necessary work is well planned and oriented. The pilots proposed, despite being models of traditional practices in companies, allow to start the necessary path towards a dual model. The work carried out will serve as an accelerator of the process if it is approached from this point of view and not as an end.



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