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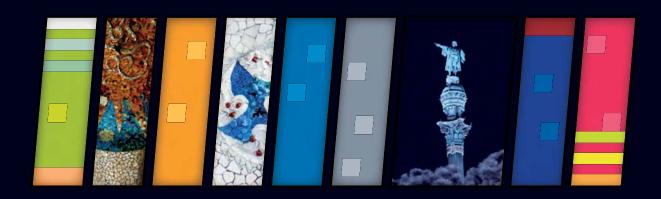## 8TH INTERNATIONAL CONFERENCE ON EDUCATION AND NEW LEARNING TECHNOLOGIES

BARCELONA (SPAIN)
4TH - 6TH OF JULY, 2016

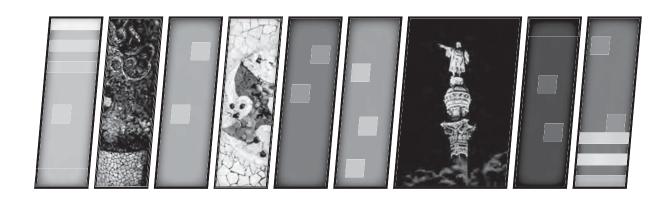# CONFERENCE PROCEEDINGS

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CONFERENCE PROCEEDINGS

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GUIDELINES AND METHODOLOGIES IN THE TUTORIAL OF FINAL DEGREE PROJECTS

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Abstract

Final Degree Project (FDP) is a work done by university students in last university year, according tutor´s guide and directly linked with the student's careers. The topic of FDP can be balanced between broad spectra and generally related to the research areas at Departments or can be imply practices carried out by the student in some company or industry. Regardless of the selected topic, the tutor must be present throughout all steps of the development of FDP: beginning, planning, development and final document, considering that this active role has a relevant percentage of the final student´s performance. This role is calling up attention from statement of European Higher Education Area (EHEA). The tutor must evaluate each of the steps of FDP, and achieve that the student is able to implement a set of basic skills in order to progress in its learning. Meanwhile, must evaluate that student can be of help in its life outside the university: entrepreneurial spirit and innovation, sustainability, effective communication, use of information resources, self-directed learning, right attitude with the work and reasoning. The aim of this work is to issue guidelines and methodologies in the tutorial of FDP, in particular in engineering studies, considering the experience of authors and extensive casuistic observed along the years.

Keywords: Final Degree Project (FDP), Competences/skills, Guidelines, Monitoring, Tutoring.

1 INTRODUCTION

University is an institution of higher education, investigation and development of scientific and humanistic culture, designed to generate knowledge and to train the best professionals [1]. For this reason, the University must fulfill high ethical standards of quality and excellence and adapted to the new times and the changes in the society [2].

This social and cultural evolution produces changes in the education system to give answers to the new societal needs. The University cannot stay on the sidelines, therefore, has an obligation to train people sensitive and sensible with their environment, able to adapt to the continuous changes and able to give ethical and creative answers to the emerging problems [2].

In recent years, since Bologna Process (1999), the educational panorama of the European Union has suffered an intense transformation with the creation of European Higher Education Area (EHEA). This process of convergence has caused that training should focus on student's learning process and in the development and the acquisition of competences. Thus, University teacher becomes a facilitator of learning [3].

The most significant change is the universalization of FDP; this subject is taught on the final stage of university studies and is included in all degrees, regardless of area of knowledge. The FDP consists of an individual and autonomous work which allows the integration of competences, both specifics and transversals. Furthermore, and in general, FPD must be led by a lecturer belonging to some Department which gets involved in the Degree and which will be the Tutor of the FDP [4, 5].

At this moment, the Tutors have a relevant role because are not only responsible for helping the student in the development of the work, but also they should be able to evaluate each of the work's stages. Furthermore, the Tutor must ensure that the student might be able to develop a set of basic competences in their learning that can serve to help them when begin their life outside the University.

Therefore, this work tries to revise the figure of the Tutor, since the introduction of the EHEA, to obtain guidelines and methodologies in order to accomplish its task in optimal conditions, from advice and development to evaluation, in which the Tutor has a relevant percentage in the final mark.

2 SINCE THE INTRODUCTION OF THE EHEA: THE FINAL DEGREE PROJECT.

2.1 Legal framework in Spain with regard to FDP

Bologna Process meant the creation of EHEA, reference framework of educational reforms developed since the early 2000s. This resulted in structural, curricular and organizational changes in the educational model, reflected in the following points [2]:

- Recognition of qualifications.
- Changes in the structure of the Degrees.
- Introduction of the system of ECTS credits.
- Mobility programmes.
- Quality assurance.
- Continuous learning.
- Competences learning.

In order to adapt to this new educational framework, during the last years, a legal framework has developed in Spain, which has supposed the obligatory of the implementation of the FDP in the Degree's final stage in all Degrees [6].

This legal framework takes as a basis the Organic Law 6/2001 of 21 of December, of universities, and the later Organic Law 4/2007 of 12 of April which modifies the former. Both open the way to the obligation of the FDP, but it is not firm.

The Royal Decree 1393/2007 of 29 of October, which determine the arrangement of official University Teaching, establishes the obligation of doing the FDP. The later Royal Decree 861/2010 of 2 of July, modifies the first one. The RD 1393/2007 establishes, in the Chapter III paragraph 3, that: "University Degree conclude with the elaboration and defense of a Final Degree Project", adding in paragraph 6, that: "The FDP must have between 6 to 30 credits, must be made in the final stage of the curriculum and must be guided to the competence evaluation associated to the Degree" [6, 7].

However, neither of these decrees specify the terms and accurate contents of the FDP, is establishing an open wording which contains many FDP forms in the Spanish universities. Thus, in order to ensure the homogeneity in the planning and evaluation of the FDP in the different degrees, each University has established an own regulation of general character flexible enough to each Faculty/School to be able to adapt it to its own speciality, indicating with accuracy FDP's characteristics.

2.2 Introduction of competences learning

The competences learning is defending within the framework of EHEA, but: What is called competence? The literal definition is the following: the quality of being competence; adequacy; or possession of required skill, knowledge, qualification or capacity; therefore, it corresponds to an integration of knowledge, skills and attitudes which students must acquire during their studies in order to be able to take effective and efficient action [8].

Competences are divided into two groups [9]:

- Specific competences, which define observable behaviors, specifically relating to the use of concepts, theories or abilities, specific to the Degree.
- Transversal competences, which identify common elements for any Degree.

In this way, students become the active protagonists in their own learning process. The learning is based on a combination of knowledge, abilities (intellectual, manual, social,…) and attitudes that will enable to any graduate to be addressed to a degree of certainty in the solving of problems or the involvement in academic, professional or social issues when they leave the University [10].

With regard to competences which must be developed during the implementation of the FDP, considering that is an individual and autonomous work which student is carried out from the beginning to final defense, the most important are [1]:

– Capacity of analysis and synthesis.

– Organizational capacity and planning.

– Decision-making skill.

– Decision analysis and solving problems.

– Good writing and oral skill, both in front of expert and inexpert audiences.

– Flexibility and creativity to apply the acquired knowledge to new contexts and situations.

– Capacity for growth in learning processes in an independent and continuous way.

– Capacity of achievement and quality motivation.

– Capacity of generation of new ideas.

2.3 What exactly does the FDP involve?

As mentioned above, the FDP is a subject within the curriculum of each Degree independently of the area of knowledge and positioned in the final year. It is a planned and developed subject by the student, which implies a large amount of ECTS credits. Its content is different for each student [4]. However, this work is led by a teacher which becomes a facilitator and revitalizing of learning. Thus, the student can demonstrate, in an integrated way, the received training contents and acquired competences of the corresponding Degree [11].

The FDP consists of the implementation of a project, study or report which content should be adapted to the assigned number of ECTS credits within the corresponding curriculum and the academic, professional or research profile of the Degree. Notwithstanding this, it is a great opportunity for the students in order to consolidate their training and to deepen in the knowledge of their professional field [5, 11].

In addition, it is important that the subject of the FDP should be adjusted to the student's interests and also it is necessary to consider other factors [12, 13]:

– The area of knowledge of the Degree.

– The amount of time available to perform the FDP.

– The type of work: research project, bibliographic review, outreach work or professional project.

Finally, the FDP Tutor should be a teacher of the responsible Faculty/School of the Degree in which student is studying, it would be preferable a Degree's teacher. In addition, the FDP can have a codirector a Faculty/School's teacher or an external professional [14].

2.4 The methodology followed for the FDP implementation

This section describes the stages in order to carry out the FDP (Fig.1) and specifying the Tutor function in each stages [2, 5, 7, 11, 12, 13]:
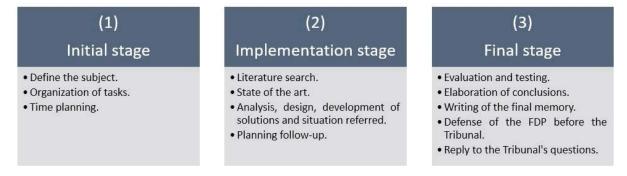
(1)	(2)	(3)
Initial stage	**Implementation stage**	**Final stage**
• Define the subject. • Organization of tasks. • Time planning.	• Literature search. • State of the art. • Analysis, design, development of solutions and situation referred. • Planning follow-up.	• Evaluation and testing. • Elaboration of conclusions. • Writing of the final memory. • Defense of the FDP before the Tribunal. • Reply to the Tribunal's questions.

Fig. 1. Stages of the FDP implementation.

2.4.1 Initial stage

In this first stage, it is defined the subject of the FDP and its purposes. The subject can be proposed by the Tutor, by the student or by agreement between them. The best option is the choice of a specific topic, not wide enough and taking into account student's interests.

Also, it must be established the FDP's planning with the following sub-tasks:

- Identify and organize the most important parts and link them with a particular application.
- Establish the tasks to be performed and the reports to be delivered to the Tutor.
- Specify the time planning of the parts of the FDP.
- Write a report that communicate the status of the work and argue it in front of the Tutor and its colleagues.

At this stage, the Tutor must advise to the student in the choice of the topic, revise the initial scheme proposed by the student and support him and offer him guidelines to organize the FDP.

2.4.2 Implementation stage

In this second stage, the student is developing the work; consequently, it is the most important and the most durable. It is divided in several sub-tasks:

- Search for bibliographic references to determine the theoretical and the referential framework of the FDP. In this case, the student should explore fully the subject, searching related bibliography: scientific papers, books, similar projects, technical documentation,…
- Integrate all the information in the theoretical framework of the FDP.
- Collection, analysis and interpretation of the data.
- Writing of the FDP's memory.

At this stage, the Tutor must advise to the student about the recommendable bibliography or additional resources, and to facility the ways to access to this information. In addition, the Tutor must supervise the produced advances. This is done by regular meetings Tutor-Student (face-to-face).

Thus, the Tutor has sufficient information to check the adequate progress of the work, doing a suitable and individualized direction, supervision and counsel. Also, the Tutor can highlight writing or structural errors to reorient to the student in order to improve the work, in both form and content and to help him to not get distracted of the main objectives of the work.

During these meetings, students should be shown receptive to the critiques so that information can be achieved for their benefit and can be able to raise doubts and questions to the Tutor during the process of developing of the FDP.

2.4.3 Final stage

This final stage corresponds to the closure of the work and the preparation of the public defense, if it were the case. Thus, the student should complete the final memory. To this end, the following sub-tasks should be performed:

- Transmit the main results of the performed in a correct, coherent and organized way (both orally and supported in other communication resources).
- Write the final memory of the FDP correctly. When considering that it must be taken into account, the structure established in the regulations as shown in Fig.2.
- Preparation of FDP's defense in front of the Tribunal; so, the student has to express himself in a correct manner.
- Response suitably the questions or doubts of the Tribunal.
- Make proposals for improving the work, future works about the FDP and/or investigations related to the FDP, both the subject of the FDP and the process followed in the FDP's implementation.

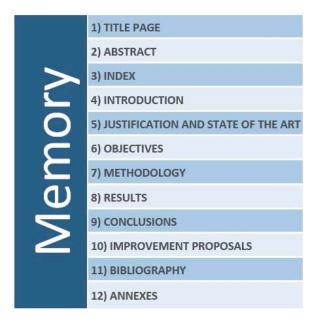|	
Memory	1) TITLE PAGE
	2) ABSTRACT
	3) INDEX
	4) INTRODUCTION
	5) JUSTIFICATION AND STATE OF THE ART
	6) OBJECTIVES
	7) METHODOLOGY
	8) RESULTS
	9) CONCLUSIONS
	10) IMPROVEMENT PROPOSALS
	11) BIBLIOGRAPHY
	12) ANNEXES

Fig. 2. Structure of the FDP's memory.

At this point, the Tutor should consider if the work, now completed, can or cannot submit for evaluation by the Tribunal. For that, the Tutor should value the consistency and coherence of the work, propose improvements in the wording or in the content (if needed) and specify the strengths and weakness of the work; in order for the student can be ready to accept criticism of the Tribunal.

Finally, the Tutor should prepare the student to the exhibition and defense of the work. Therefore, the Tutor should give general guidelines in order to control the exposure time, select the most important points of the work, control the behavior during the defense and give him information on the best way to respond to the Tribunal. Specially, the Tutor should help him to explain the main ideas (conclusions, personal contributions or innovative ideas which the student has reached) clearly, with great capacity for synthesis, orderly and rigorously.

Also, the Tutor should instill in the student the need to rehearse the presentation and respect the views of the Tribunal.

2.5   The role of the Tutor in the FDP

In general terms, the Tutor of an FDP must guide and advise to the student, on how to investigate and to present the results of the investigation. In the same way, the Tutor must control the time in order to carry out the time planning. Moreover, the Tutor must also be responsible for [2, 11, 14]:

- Establish clearly: the objectives, the methodology and the time planning of the FDP.

- Provide necessary guide, advice and support during the implementation of the FDP.

- Supervise to the student in decision-making that affect the structure of the work.

- Supervise the student to make a correct presentation.

- Guide advice the student on the literature search.

- Assess the achievement of the proposed objectives.

- Allow the presentation of the FDP.

- Be familiar with the necessary management procedure to the implementation of the FDP, indicating to the student about steps to be followed in each moment.

In short, the Tutor is a facilitator, learning guide and adviser in the learning process. Its role is not concerned with the implementation process, but also to the training activity of the student.

The student takes into account that the Tutor is not coauthor of the work; he is neither a spell nor grammar checker. The Tutor provides to pursue to a successful conclusion of the work. Also, the Tutor must provide the student the necessary tools he needs.

In the end, for a Tutor, the tutoring is an important job which is understood as a new educational area for reflection where students can show their perceptions, reflections, problems and aims. The Tutor must teach them to learn how to learn [2, 16].

2.6 Problems during the direction of an FDP

When an FDP is managed, a Tutor can find different problems; therefore, in this section, these problems will be mentioned [11, 12, 13]:

- Insecurity of the students when they are trying to address the FDP. There are several reasons for this:
  - o It is often their first time they are exposed with the investigation.
  - o Lack of knowledge with the dynamics of the work.
  - o Bad organization.
  - o Lack of experience in literature search or how to structure a work like this.
- Also, it is often their first time they write a text of this kind, being confronted with a blank page and to write what they did in a coherent manner is a difficult task which they were not used to do it.
- FDP is a subject which has no assigned lessons; consequently, it is not possible that teachers have enough time to transmit to their students the knowledge needed to overcome it successfully.
- Sometimes, students combine the development of the FDP with other subjects; thus, they are at risk of distracting and they cannot focus to the fullest on the FDP.
- As FDP is an individual work which can be managed for any teacher of the Degree, it can appear several criteria for direction or for demand for the Tutors.
- During the whole duration of the work, there may be unforeseen situations or special cases, both for the student and for the teacher such as medical leaves, personal circumstances, research placements,… which must be addressed as sensitivity. Regulations must be followed just as the time planning, but, in such cases, the Tutor must be flexible and, as far as possible, predict in advance different alternatives if these problems should arise.
- Currently, the excessive number of works which are managed by each teacher has increased substantially, this has a direct impact on the quality of the FDP because the monitoring cannot be carried out with the sufficient dedication.

3 CONCLUSION

The function of the Tutor when manages an FDP consists in guiding, monitoring and planning the tasks of the students, as well as to cooperate with them. Thus, the selection of the Tutor by the students is a complex task which needs to be done with criteria, in order to the Tutor becomes a great support to them during the whole procedure.

The tutoring cannot be systematic because it depends on a lot of factors like the type of work or the time to the implementation of the FDP. Furthermore, it also depends on the correspond area of knowledge.

When a teacher manages an FDP should be assertive and able to provide detailed information. Also, the Tutor has to highlight the problems of the work, the strengths and weakness, and their possible solutions, taking into account the particular characteristics of each student.

ACKNOWLEDGMENTS

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