



How to promote critical thinking through the Final Degree Project

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1. Introduction

The assessment regulations of the Faculty of Economics and Business of the University of Barcelona establish that there is no possibility of a single assessment of the FDP subject, but that it must be a continuous assessment, which incorporates compulsory tutoring sessions and the delivery of a series of activities. The necessary monitoring by the tutor of the work done by the student means that the results obtained in terms of performance and assessment in the surveys are positive.

Some data in this sense would be the following: in the last three years the performance rate in this subject has been around 83% and the average assessment of both students and tutors (via satisfaction survey) has been between 7.5 and 8 (out of 10).

Despite these positive results, from our own experience in tutoring FDP and from informal conversations with other tutors and with some students, some quite frequent weaknesses have been detected, such as, for example:

- When the time comes to register the FDP, students do not know which thematic line to choose and in many cases end up making their choice depending on the person tutoring. In other words, they choose a teacher they know, rather than a subject that really interests them.
- Once enrolled in a thematic line, they have not been able to mature an idea that fits. They often accept to develop an idea suggested by the tutor himself and this can have a negative influence on the involvement of the student who does not perceive the idea as "his" or does not motivate him sufficiently.
- Since students are very hesitant about what they want to do and how they want to do it, a semester ends up being an insufficient period to mature the idea and plan well the process of carrying out the FDP. Time is needed to think, to read, to structure and, finally, to write with a certain rigour. This is difficult in the current context in which our students move (mental dispersion and many activities).

The Public Economics Department teaches three subjects that, despite being separate subjects, are perfectly complementary in terms of content. Public Finance is taught in the 2nd and 2nd semesters; Tax System 1 is taught in the 3rd and 1st semesters; finally, Regional and Local Finance is also in the 3rd semester but in the 2nd semester. This sequence of 3 semesters allows us to monitor students over a relatively continuous and

long period, creating a very good opportunity to work on creativity and critical thinking, skills that need time to exercise.

The idea is for students to start thinking very early on about ideas that motivate them (for example, from a news item that challenges them or from the experience of someone close to them that directly affects them) to start researching these ideas. In other words, to train them to think critically about ordinary issues that can be formulated as research questions; all this in the field of public economics, which is the common thread of the content of the three subjects.

Thus, in addition to working on critical thinking skills, a Register of Innovative Ideas would be created, which could be the embryo of future FDPs.

2. Methodology

The general objectives of the project are:

1. To promote and evaluate critical thinking in the classroom.
2. To work in a coordinated manner between the three subjects in the field of the public sector, so that students work on critical thinking in stages each semester.
3. Promote the work of the teaching staff of the three subjects a team, both in terms of subject content and in the development of critical thinking, taking advantage of the fact that they are the same students.

To encourage the future completion of the FDP and especially the choice of topic to be a creative and reflective process that is trained from the second year to achieve a more conscious and motivating choice on the part of the student.

In addition, the following specific objectives are proposed:

That students can:

1. Think through enquiry and writing.
2. Analyse and evaluate information.
3. Pose a variety of solutions or perspectives.
4. Present conclusions or inferences based on the facts (decision making).
5. Synthesize ideas.
6. Identify, characterize and evaluate arguments

The following actions will be carried out to achieve these objectives:

- Thinking through enquiry: Asking questions and using the answers to understand the world around us is what drives critical thinking. If we want students to generate good questions for themselves, we need to teach them to do so by providing them with the structure and guidance of sample questions, either in writing or using questions in the classroom. In this sense, examples of some questions would be: What are the strengths and weaknesses of...? What is the difference between... and...? What are the implications of...? What argument can be made against...? Do you agree or disagree with this statement? What evidence is there to support your answer? etc.
- Critical thinking through writing: Another essential ingredient of teaching critical thinking is the use of writing. Writing turns students from passive to active learners and forces them to identify problems and formulate hypotheses and arguments. The act of writing forces students to focus and clarify thoughts before putting them on paper, which leads them through the critical thinking process. Examples of critical thinking writing activities include giving students dirty data and asking them to write an argument or analysis based on the data; or developing a scenario that places students in realistic situations relevant to our discipline, in which they must decide to resolve a conflict.
- Critical thinking through group collaboration: Opportunities for group collaboration may include discussions, case studies, task-related group work, peer review or debates. Group collaboration is effective in promoting critical thinking because students are exposed to different perspectives while clarifying their own ideas.
- Contrast current news stories from various media to contrast points of view and approaches.
- Establish debates on current topics of interest to students to promote active listening and respect for opinions different from one's own.
- To generate possible future themes for FDP, which will feed a register of innovative ideas for the Virtual Camps of the different subjects, ideas that will be expanded and/or improved.

All this also implies specific actions on the part of the teaching staff involved. In this regard, it should be noted that, to achieve good critical learning, subject teachers will carry out the following actions:

- Promote reflection with open questions and make students question the content.
- Create a motivating environment, arousing interest and curiosity, while encouraging creativity and imagination.

- Lead students towards their own learning, favouring autonomy, acting as guides towards the construction of their own knowledge.

We will use students' responses to activities that promote critical thinking to assess whether they are, in fact, achieving the critical thinking objectives. We believe it is important to establish clear criteria for assessing critical thinking, as it helps both students and teachers to know what they are working towards. Effective criteria measure which skills are present, to what extent, and which skills require further development. We point out below some of the characteristics of work that can demonstrate effective critical thinking and which in our case we will work on through a rubric that will be made public to our students:

- Accurately and thoughtfully interprets evidence, statements, graphs, questions, etc.
- Asks relevant questions.
- Analyses and evaluates key information and alternative points of view with clarity and accuracy.
- Fairly examines beliefs, assumptions and opinions and compares them with the facts.
- Draws insightful and reasonable conclusions and justifies them.
- Reflectively addresses and evaluates major alternative points of view.
- Thoroughly explains assumptions and reasons.

For the evaluation of the results, we will use the following indicators focusing on the project objectives.

Therefore, we will group some objectives together, for example the general objective 1: To promote and evaluate critical thinking in the classroom, we will group it with the 6 specific objectives, as these 6 are the concrete materialisation of the general objective.

- Clearly define the problem, precisely identify the central issues, appreciate the depth and breadth.
- Identify and evaluate significant and relevant points of view.
- Demonstrate impartiality towards the problem.
- Gather sufficient, credible and relevant information that opposes and/or supports the argued position.
- Distinguish between information and inferences drawn from information.
- Make assumptions that are consistent, reasonable and valid, taking nothing for granted.
- Give arguments with a critical and responsible sense of what is being argued.
- Draw contrasted conclusions and avoid bias.

Assessment of general objectives 2 and 3: 2) To work in a coordinated manner between the three subjects in the field of the public sector, so that students work on their

critical thinking in stages each semester. 3) To strengthen the work of the teaching staff of the three subjects as a team, both in terms of subject content and in the development of critical thinking, taking advantage of the fact that they are the same students.

We have combined these two objectives for the purposes of indicators, as they are absolutely related.

To evaluate it, the most relevant indicator will be the sharing and analysis by the teaching team of the results of the evaluation rubric of the mentioned objectives (General 1 and 6 specific ones) and to design from this information the concrete actions (specific tasks, calendar, etc.) of the following subject.

Evaluation of general objective 4: To encourage that the future realization of the FDP and especially the choice of the topic is a creative and reflective process that is trained from the second year to achieve a more conscious and motivating choice by the student.

In this case, the most relevant indicator will be the Register of Innovative Ideas that will be developed from the first subject and that will be the germ of future lines of research.

It will not only be a list of topics but the result of reflection on current issues that interest our students and which they are interested in exploring in depth.

To observe the indicators that refer to general objective 1 and the 6 specific ones, we will use the following rubric as an evaluation instrument, based on the one proposed by the Foundation for Critical Thinking. (See Table 1).

Table 1. Critical thinking grid

	4 - Exemplary If applicable, consistently does all or almost all of the following	3 - Satisfactory If applicable, consistently does most or many of the following	2 - Below Satisfactory If applicable, consistently does most or many of the following	1 - Unsatisfactory If applicable, consistently does all or almost all of the following
Purpose	--Demonstrates a clear understanding of the assignment's purpose	--Demonstrates an understanding of the assignment's purpose	--Is not completely clear about the purpose of the assignment	--Does not clearly understand the purpose of the assignment
Key Question, Problem, or Issue	--Clearly defines the issue or problem; accurately identifies the core issues --Appreciates depth and breadth of problem --Demonstrates fair-mindedness toward problem	--Defines the issue; identifies the core issues, but may not fully explore their depth and breadth --Demonstrates fair-mindedness	--Defines the issue, but poorly (superficially, narrowly); may overlook some core issues --Has trouble maintaining a fair-minded approach toward the problem	--Fails to clearly define the issue or problem; does not recognize the core issues --Fails to maintain a fair-minded approach toward the problem
Point of View	--Identifies and evaluates relevant significant points of view --Is empathetic, fair in examining all relevant points of view	--Identifies and evaluates relevant points of view --Is fair in examining those views	--May identify other points of view but struggles with maintaining fair-mindedness; may focus on irrelevant or insignificant points of view	--Ignores or superficially evaluates alternate points of view --Cannot separate own vested interests and feelings when evaluating other points of view
Information	--Gathers sufficient, credible, relevant information: observations, statements, logic, data, facts, questions, graphs, themes, assertions, descriptions, etc. --Includes information that opposes as well as supports the argued position --Distinguishes between information and inferences drawn from that information	--Gathers sufficient, credible, and relevant information --Includes some information from opposing views --Distinguishes between information and inferences drawn from it	--Gathers some credible information, but not enough; some information may be irrelevant --Omits significant information, including some strong counter-arguments --Sometimes confuses information and the inferences drawn from it	--Relies on insufficient, irrelevant, or unreliable information --Fails to identify or hastily dismisses strong, relevant counter-arguments --Confuses information and inferences drawn from that information
Concepts	--Identifies and accurately explains/uses the relevant key concepts	--Identifies and accurately explains and uses the key concepts, but not with the depth and precision of a "4"	--Identifies some (not all) key concepts, but use of concepts is superficial and inaccurate at times	--Misunderstands key concepts or ignores relevant key concepts altogether
Assumptions	--Accurately identifies assumptions (things taken for granted) --Makes assumptions that are consistent, reasonable, valid	--Identifies assumptions --Makes valid assumptions	--Fails to identify assumptions, or fails to explain them, or the assumptions identified are irrelevant, not clearly stated, and/or invalid	--Fails to identify assumptions --Makes invalid assumptions
Interpretations, Inferences	--Follows where evidence and reason lead in order to obtain defensible, thoughtful, logical conclusions or solutions --Makes deep rather than superficial inferences --Makes inferences that are consistent with one another	--Follows where evidence and reason lead to obtain justifiable, logical conclusions --Makes valid inferences, but not with the same depth and as a "4"	--Does follow some evidence to conclusions, but inferences are more often than not unclear, illogical, inconsistent, and/or superficial	--Uses superficial, simplistic, or irrelevant reasons and unjustifiable claims --Makes illogical, inconsistent inferences --Exhibits closed-mindedness or hostility to reason; regardless of the evidence, maintains or defends views based on self-interest
Implications, Consequences	--Identifies the most significant implications and consequences of the reasoning (whether positive and/or negative) --Distinguishes probable from improbable implications	--Identifies significant implications and consequences and distinguishes probable from improbable implications, but not with the same insight and precision as a "4"	--Has trouble identifying significant implications and consequences; identifies improbable implications	--Ignores significant implications and consequences of reasoning

4 = Thinking is exemplary, skilled, marked by excellence in clarity, accuracy, precision, relevance, depth, breadth, logicity, and fairness
 3 = Thinking is competent, effective, accurate and clear, but lacks the exemplary depth, precision, and insight of a 4
 2 = Thinking is inconsistent, ineffective; shows a lack of consistent competence: is often unclear, imprecise, inaccurate, and superficial

@Foundation for Critical Thinking, www.criticalthinking.org.

We will also use records of interventions in the classroom and participation in debates.

To observe the indicators that refer to general objectives 2 and 3, we will use as an evaluation instrument the reports of the PDI involved in each subject that contain the relevant information (results of the rubrics, evolution, etc.) and that will be carried out at the end of the subject and will be shared with sufficient time in advance because they will serve as a basis for the actions of the following subject.

For the observation of the indicator that refers to general objective 4, we will have several indicators throughout the three years of the project: firstly, the number of ideas contrasted and approved for inclusion in the Register of Innovative Ideas. Secondly, in the third year, we will record how many of these ideas have materialised in firm FDP proposals.

As mentioned above, a rubric will be used as an evaluation instrument for each activity carried out (see attached document). The assessment data of each student will be collected and incorporated into the final grade of each subject with the corresponding weighting.

Based on this data, the corresponding reports will be drawn up by the teaching team, in which the evolution of the students in terms of the acquisition of critical thinking skills will be recorded.

The register of Innovative Ideas will be the procedure foreseen to incorporate the different proposals in each subject and to see their future development.

Finally, students will be surveyed to find out to what extent they consider that working on critical thinking has really helped them in carrying out the FDP.

3. Results

The project will start to be implemented from February 2024 and the results will be obtained on a semester-by-semester basis until it is finally evaluated in July 2025.

We can therefore only speak of expected results.

In accordance with the objectives set out, it is expected that the student will be able to show in an integrated manner the training contents and competences associated with the bachelor's degree.

Among these competences, there are two general competences and one specific competence directly related to the proposal presented. Of the general ones, we highlight: the creative and entrepreneurial capacity or the capacity to adapt to dynamic environments; and of the specific ones, the critical capacity to analyze economic theories and models.

All of them coincide with some of the most highly valued skills in the current labor market.

4. Conclusions

From our experience as coordinators of the Final Degree Project in the Faculty of Economics and as tutors of several students in this field, we have been able to detect a series of difficulties that our students face when they start their project.

Although the FDP should be the subject in which they can apply all the skills acquired throughout their studies, and in which they can carry out a process of deep reflection and research on a topic that interests them, in most cases it is observed that students do not know what topic to choose or how to face this process.

One of the main problems that we have been detecting is that students are not used to using critical thinking, in many cases because it is a skill that has not been worked on throughout their studies.

For all these reasons, we believe it is necessary to help them in this process by starting to work on their critical thinking a year before they begin to prepare their FDP, through a series of actions in three subjects that are absolutely coordinated and all of them of a compulsory nature.

Although, as we have already mentioned, we will not have tangible results until 2025, we expect to achieve:

- Good acceptance by the students of the proposal and above all that will help them not only in the FDP but also to do any research work.
- Advances in the culture of creativity and critical thinking.
- Better performance in the Final Degree Projects.

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