
**ASSESSING STUDENTS COMPETENCIES AND
LEARNING IN MASTER THESIS PROJECTS: TOWARDS
AN INTEGRATED EVALUATION APPROACH**

*EVALUACIÓN DE LAS COMPETENCIAS Y EL
APRENDIZAJE DE LOS ESTUDIANTES EN PROYECTOS
DE MÁSTER: HACIA UN ENFOQUE DE EVALUACIÓN
INTEGRADA*

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ABSTRACT

This study is conducted in the context of a Spanish Business School, applied to different Master degree programme. The objective is focused on the identification of which generic skills are needed and developed in a Final master thesis (FMT). Therefore, this study is double folded. On the one hand we use a survey to ask the students which generic skills they consider that should be needed and developed in their FMT, and on the other, we explore the elaboration process as well as validation process of tools to gather information and evidences in order to assess the final results of the FMT being submitted by the students at the end of their learning journey. Specifically, this paper develops the preliminary results approach to the identification of the competencies from the student's perspective.

KEYWORDS

final master thesis, generic skills, assessment, learning evaluation, higher education

RESUMEN

Este estudio se realiza en el contexto de una escuela de negocios española, aplicada a diferentes programas de master. El objetivo se centra en la identificación de las habilidades genéricas necesarias y desarrolladas en una tesis de master final (TFM). Por lo tanto, este estudio tiene un doble propósito. Por un lado, utilizamos una encuesta para preguntar a los estudiantes qué habilidades genéricas consideran que deberían ser necesarias y desarrolladas en su TFM, y por otro, exploramos el proceso de elaboración y de validación de herramientas para recopilar información junto con evidencias para evaluar los resultados finales del TFM presentado por los estudiantes al final de su aprendizaje. Específicamente, este documento desarrolla el enfoque de resultados preliminares para la identificación de las competencias desde la perspectiva del estudiante.

PALABRAS CLAVE

tfm, proyecto fin de master, habilidades genéricas, evaluación, aprendizaje, educación superior

INTRODUCTION

Over the past few years we have observed an increasingly interest in how to help students in higher education to develop their generic skills. It is also relevant at the level of the Master thesis, considering that it is the final and often crucial part of the graduate degree which requires many generic skills. Nonetheless very little research has directly focused on them. In the context of the Bologna process initiated by the European Union, there is an emphasis on the development of generic skills. Even though general lists of generic skills have been developed, no specific prior work has focused on Master thesis projects in detail (Katz, 2005).

Regarding the master's degree, the Helsinki Conference on master's-level degrees, an offshoot of the Bologna declaration stated that students who are awarded a master's degree: must have achieved the level of knowledge and understanding, or high level in artistic competence when appropriate, which allows them to integrate knowledge, and handle complexity, formulate judgments and communicate their conclusions to an expert and to a non-expert audience. Students with a master's degree will have the learning skills needed to pursue further studies or research in a largely self-directed, autonomous manner.

This definition has been ascertained to cover a broad range of master's degrees in different knowledge areas. Concerning the professional master's programmes, some particular aspects are crucial, such as the development of critical thinking and problem-solving abilities, as well as the importance of self-directed learning. In spite of some outcomes, there remains an important gap in

how these outcomes expected by graduated master students are to be achieved, or how to evaluate whether these outcomes have been attained.

Therefore, in this paper we discuss the preliminary results of the application of the process of developing an integrated assessment model for the evaluation of the generic competencies developed by the students in the framework of their FMT.

CONCEPTUAL BACKGROUND

A higher education does not only give the student a specific set of facts, knowledge and skills. It also develops general skills that are useful in a wide set of situations. Development of such generic skills (GS) can be as, or sometimes more, important than the specific subject knowledge from a course. Different countries within the EU are free to interpret and adapt the Bologna process and its documents to its own educational system, even if the general direction is fixed. As introduced before, within the Bologna process there is an emphasis on the development of generic skills. Even though general lists of generic skills have been developed no specific prior work has focused on Master thesis projects.

A Master thesis is an intermediate degree between a basic, bachelor degree and an advanced, PhD degree. It has elements of both research and advanced development and also application of knowledge in industry. Notwithstanding, few empirical investigations into generic skills within Master thesis projects can be found in the specialized literature. Specifically concerning the identification of competencies according to the level of specialization studies, the European Commission through the funding of the Tuning project, applied in 16 countries across Europe, with the participation of around 130 universities. The Tuning framework specifies levels of learning to be achieved at the different educational cycles (Bachelor, Master, Doctor). The reference points can be either generic or subject-specific. Even though subject-specific competences are the basis for university degree programmes, Tuning has highlighted the importance of also developing generic skills that prepare students for their future role in society and increases their employability.

Different national governments have adopted the European classification of competencies into generic and specific (Tuning Educational Structures in Europe I, 2003). Also, government on national levels have adopted these classifications, as is the case of Spain with its national quality agency (ANECA). According to the European approach, generic competencies could be classified into: instrumental (e.g., capacity for analysis and synthesis, information management skills, problem solving and decision-making), interpersonal (e.g., teamwork, interpersonal skills, appreciation of diversity and multiculturalism and ethical commitment), systemic (e.g., capacity for applying knowledge in practice, capacity to adapt to new situations, leadership, ability to work autonomously, initiative and entrepreneurial spirit, concern for quality and will to succeed). For most competences there was a large similarity between different academic fields. Examples are the capacity for analysis and synthesis, capacity to learn and problem solving. In a similar way, generic competences important for employability was identified.

The acquisition of competencies has been a hot topic in different scholar's studies in different educational areas such as in the health education (Sedgwick, Kellett & Kalischuck, 2014)., engineering (Marin-Garcia et al., 2008), competencies in specific field areas such as business and management (Ciudad Gómez & Valverde Berrocoso, 2012), accounting (Guitart-Tarrés et al, 2014)., or in the final year projects (Mateo et al., 2012). In the existing literature about students' competence development measurement, in which current and future levels of competence levels are compared using an ICT-based tool. For instance, the competences of master students were analyzed and found that students improved in self-control and cognitive capacity competence (Achcaoucaou et al., 2012). Some studies have dealt with the master student's experience of research and research supervision (Drennan & Clarke, 2009) and also on the use of rubrics to evaluate generic skills in engineering masters thesis (Feldt, Höst & Luders, 2009). However, it is not commonly found an extensive research line and evidences of acquisition levels identification applied to the master level's degree. Notwithstanding, with this paper we tried to deepen the knowledge on competence acquisition by master students, specifically focusing in their perspective applied how the development of the Master thesis, has helped them with development or strengthening of specific generic competencies.

RESEARCH DESIGN

The methodology applied is also double folded. We used a survey to assess the student's perspectives and we conducted a Delphi study to validate a set of variables and specific indicators to build up an assessment tool in order to be used for the evaluation of the FMT projects. Because the Delphy study (Murray & Hammons, 1995) has not been finished yet, we decided only to include in this paper one part of the methodology being developed within the study, which is the competency survey applied to the master students. In the next sub-section, we will explain this specific part of the study being conducted that bring forward the preliminary results of the student's competencies survey.

Competencies survey

The study design was though as a cross-sectional survey of postgraduate students who where completing a thesis as part of their coursework master's degree in three knowledge field areas: master in marketing and sales, master in corporate communication, master in business administration. The main aim of this part of the study was to understand and identify what were the student's experiences and perspectives of what were the most important competencies and skills they think is important when finishing a master program in these professional fields, as well as which competencies they felt that were most developed throughout the final master thesis coursework.

Data gathering and sample

The students evaluated were graduates of coursework's masters in corporate communication management, marketing and sales and master in business administration. The aim of the degrees is to prepare students to work on advance levels and put into work a research and analytical conceptual part, as well to put

into practice these concepts in one case study analysis. For the marketing and sales program students may develop a research based work or a professional driven case study by developing a marketing plan. In the corporate communication management, students can also choose among developing a research topic or conducting a professional driven project such as developing a complete communication plan for a company. Finally, in the MBA, students may develop a business plan or a research within a topic of business and management field. During the Master's programmes at the time of the development of their FMT students have courses in different conceptual and professional conceptual topics, and the completion of the FMT is a central component of their curriculum.

A total of 160 students who is graduating from the academic year of 2015/16 with graduating in these three master programmes were surveyed. All three programmes were on a full-time basis. The questionnaire was administered through a web interface via a web service. The link to the questionnaire and a request to participate was sent in an email to all the students of the three mentioned programmes. From the 160 surveyed students we had 91 responses, resulting in a response rate of 56,8% of the total demographic profile of graduate students enrolled in these three master programmes.

The questionnaire was designed by contemplating the concepts of the generic skills being listed up by the Tunning report (Tuning General Brochure, 2006).as well as based on the generic skills that are listed in the courses syllabus of all the Master programmes. The business school where the master programmes are offered have recently reworked all course syllabus to fulfil the requirements of the official master programmes recognised by the national quality agency (AQU, 2013) that the School have interpreted as stated by the Bologna process. One of the sections in this new syllabus template is named 'Generic skills' and calls for the generic skills trained by the course to be listed. One of the authors created an initial draft of the questions to be used in a questionnaire which the other authors then reviewed and updated slightly. After the revision, we finally got a final list of 14 generic competencies, that we asked students to assess it in two ways. On the one hand we proposed the full list and asked them to select those competencies that they consider having developed during the elaboration of their FMT. On the other hand, we asked them to assess on a Likert scale (1 -5) what level of development they consider to have achieved during the elaboration of their thesis project.

When preparing the questionnaire, we also included other questions such as how many hours they have employed in total in the development of the thesis, as well as what pace of development they have considered had followed: slow, average or fast, in order to understand how the hours stated in the syllabus related to autonomous and guided work hours were being interpreted and assess by the students.

RESULTS

The objective of this paper that bring forward preliminary results was to identified which are the generic competencies that the master's students give a higher levels of importance when developing and presenting their final master

thesis. In figure. 1, we may observe a first descriptive analysis approach to generic competencies present in the master programme syllabus which were assessed by the students.

Figure 1. List of the individual assessed generic competencies with descriptive data

Competencies	N	Min.	Max.	Mean	Stan. Dev.
Capacity for analysis and synthesis	91	2	5	3,86	,642
Will to succeed	91	1	5	4,02	,856
Problem solving	91	1	5	4,00	,830
Ability to search and management information (information management skills)	91	1	5	3,95	,821
Ability for planning, organization and time-management	91	1	5	3,92	,922
Capacity to generate new ideas –creativity	91	1	5	3,90	,844
Concern for quality	91	1	5	3,99	,863
Capacity for applying conceptual knowledge in practice	91	1	5	3,95	,835
Ability to work autonomously	91	1	5	4,04	,918
Ability for critic and self-criticism	91	1	5	3,99	,738
Decision-making skills	91	2	5	4,09	,644
Capacity to adapt to new situations	91	2	5	4,25	,660
Initiative and entrepreneurial spirit	91	1	5	3,69	,915
Teamwork and conflict management	91	1	5	4,09	,865

The group of competencies that had a higher value were the decision making skills, the ability to adapt to new situations (with minimum higher than 2), followed by the competency of team work and conflict management.

Furthermore, in order to investigate the interrelationship among the competencies, we have conducted an analysis of principal components, through which we could observe a level of affinity between the assessed competencies, that can be observed in Figure 2.

Figure 2. Affinity between competencies

Component Matrix*	Component	
	1	2
Capacity for analysis and synthesis	,573	-,127
Will to succeed	,730	,362
Problem solving	,566	-,523
Ability to search and management information (information management skills)	,513	-,195
Ability for planning, organization and time-management	,689	-,396
Capacity to generate new ideas –creativity	,597	-,196
Concern for quality	,740	,337
Capacity for applying conceptual knowledge in practice	,581	-,182
Ability to work autonomously	,433	,468
Ability for critic and self-criticism	,536	,595
Decision-making skills	,601	,028
Capacity to adapt to new situations	,620	,171
Initiative and entrepreneurial spirit	,654	,106

Teamwork and conflict management	,647	-,407
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*Extraction Method: Principal component analysis. (2 extracted components)

Inferring in this first preliminary results, we can basically find correlations referring to the variables of decision making, capacity to adapt to a new situation, initiative and entrepreneurial spirit. Therefore, on component 2, we may observe a higher relation between the interpersonal (ability for critic and selfcriticism) and systemic competencies (concern for quality and ability to work autonomously). On the other hand, we may observe in component 1, a higher representation of systemic competencies.

DISCUSSION

The present paper has analyzed generic skills in a cross-disciplinary programmes of final master thesis by applying a competence survey to assess the student's perspectives in competence acquisition. This competence evaluation will permit to further develop an integrated assessment model for the evaluation of the generic competencies developed by the students in the framework of their FMT.

Future research could enrich the model by asking companies about the skills and competencies that students should acquire in a FMT (Dominguez-CC, Revilla-Camacho, & Cossío-Silva, 2018). In order to better know the skills of a TFM aimed at obtaining better employability (Azevedo, Apfelthaler, & Hurst, 2012). This would facilitate the reduction of the gap between theory and practice (Diez-Martin, 2018).

The preliminary results showed that students do not demonstrate a higher difference in acquisition level range when it comes to the three types of generic competencies. It may be suggested that the slightly emphasis the students have considered was more associated with instrumental and systemic competencies, specifically with those skills more related with developing an academic work (their master thesis). Which demonstrates a higher confidence associated with skills such as capacity for analysis and synthesis, decision making skills and capacity to adapt to new situations, which have presented the lower standard deviation.

Furthermore, these preliminary findings suggest that the completion of a master thesis as a component of a coursework master's degree leads to positive student outcomes in the development of the three main competencies levels (instrumental, systemic and interpersonal) as explained previously, even though it emphasized more on the two main ones (instrumental and systemic). However further in depth analysis is being conducted to provide more insights into these relationships, as well as to be able to integrate the evidences from the student's perspectives with the assessment criteria for their evaluation within the master thesis supervision process.

DECLARACIÓN DE CONFLICTO DE INTERESES

Los autores declaran que no existen conflictos de intereses potenciales con respecto a la investigación, autoría y / o publicación de este artículo.

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