

SOME EXPERIENCES ON DEVELOPING AND EVALUATING TRANSVERSAL COMPETENCES IN HIGHER EDUCATION

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Abstract

The Bologna process has driven a student-centered learning which has affected the whole learning/teaching process, with teachers and students both participating a process of cooperative learning in order to develop useful competences. In this context, graduates are due to dispose of a bunch of generic and subject-specific competences. Transversal or generic competences are trans-disciplinary, which means that they are useful beyond the disciplines; in addition, key competences have also been distinguished and defined by the EU as the extent to which each individual has developed the competences that all individuals need for personal fulfillment and development, active citizenship, social inclusion and employment. These generic skills (methodological, social and intercultural competences, ethical values) are essential for finding, retaining or developing the individual position in society.

Before the Bologna process, higher education institutions had extensive experience in providing subject-specific competences, but they were less experienced in soft skills development. In the last years, study programs have been designed in order to leave room for all the components that contribute to education, which include competencies beyond a particular discipline. So as to meet the expectations, all agents have been involved in the process: employers, public and private institutions, present and future students, teachers and administrations.

As a result, institutions have defined a list of general competences that all their graduates should meet before graduation. New graduate and post-graduate courses explicitly include these competences development, and state that their degree of achievement needs to be assessed. Nevertheless, assessing general and key competences continues to be a challenge. In fact, teachers and lecturers manifest their worries about finding adequate evidences which support the acquisition of a particular transversal competence. This might be a key factor since making an explicit statement of what it means to be competent at given levels of learning requires specifying the learning outcomes associated to each competence.

Taking all the above into account, the present paper tries to provide some examples of development and assessment of transversal competences in two different higher-education contexts, by using lecturers' experiences as a source of information. Details on the characteristics of the competence developing project of each institution, as well as the list of generic competences defined in each case are given and discussed, paying especial attention to common points. Challenges, difficulties and opportunities of developing and evaluating various general and key competences are described, taking into account specific and differentiating aspects such as institution, course (level), available resources or number of students per class.

Keywords: generic competences, transversal competences, key competences, assessment, evaluation, life-long learning, higher education experiences.

1 INTRODUCTION

The Bologna process, the European frame of reference for the reform of higher education, has driven a student-centered learning approach which has affected the whole learning/teaching process. It is focused on employability as an important goal of studies and designates a strategy to monitor the outcomes of teaching and learning in a process by means of the competences that are to be acquired [1]. This approach implies that both teachers and students participate a process of cooperative learning in order to develop useful competences.

Transversal or generic competences are trans-disciplinary, which means that they are useful beyond the disciplines; in addition, key competences have also been distinguished and defined by the EU as the extent to which each individual has developed the competences that all individuals need for

personal fulfillment and development, active citizenship, social inclusion and employment. Generic skills (methodological, social and intercultural competences, ethical values) are essential for finding, retaining or developing the individual position in society. According to Pertegal [2], employees demand *good workers* that are also *good mates*.

Before the Bologna process, Universities had extensive experience in providing subject-specific competences, but they were less experienced in soft skills development. While the concept of competence or competency is not new, work activities were traditionally attached to a job and person specification and performance was measured against description of tasks. There was also a trust on the fact that knowledge-based qualifications enable the owner to transform 'knowing about' into 'knowing how to' [2]. Higher education had traditionally used a content or specific knowledge approach [3]; however, the European frame boosted a re-thinking to develop and assess competence performance, and promoted the competence-based approach.

In line with this, study programs have been designed in the last years to leave room for all the components that contribute to education, and this includes competencies beyond a particular discipline. This shift of perspective focused on learning rather than teaching, emphasizes three main aspects: the students as responsible subjects of their educational process; the quality of teaching and learning, and the mutual agreement about aims and contributions in a shared responsibility, i.e. the 'learning contract' [1]. So as to meet the expectations, all agents have been involved in the process: employers, public and private institutions, present and future students, teachers and administrations.

Competence and competences are job related descriptions of an action, behavior or outcome that should be demonstrated in individual's performance. Competency and competencies are person orientated referring to person's underlying characteristics and qualities that lead to an effective/superior performance. However, it must be noted that competency can be more than the observed performance; the potential can be higher than the actual performance, since competency can come up differently in different type of contexts [3].

Generic and key competences are also a part of today's curricula in higher education. An important point mentioned by D. Chur [1] is that key competences are not only explicit learning objectives of specific modules, but they are also implicitly contained in studying since: In order to actively participate in courses as well as to succeed in doing their autonomous work, students need strategies of self-directed learning (focusing attention, communication and teamwork skills, or time management). These competences concern self-regulation and include knowledge, self-reflection and action.

At present, higher education institutions in Europe have defined a list of general competences that all their graduates should meet before graduation. New graduate and post-graduate courses explicitly include these competences development, and state that their degree of achievement needs to be assessed. Nevertheless, teachers and lecturers manifest their worries about finding adequate evidences which support the acquisition of a particular transversal competence. This might be a key factor since making an explicit statement of what it means to be competent at given levels of learning requires specifying the learning outcomes associated to each competence [4]. It seems that assessing general and key competences continues to be a challenge.

The present paper tries to provide some examples of development and assessment of transversal competences in two different higher-education contexts, by using lecturers' experiences as a source of information. Challenges, difficulties and opportunities of developing and evaluating various general and key competences are described, taking into account specific common and differentiating aspects.

2 METHODOLOGY

This work is mainly based on the experience and reflections of the authors as being lecturers of different institutions, both committed with the Bologna process and the compromise of transversal competences development. To start, the authors of the present paper elaborated the following questionnaire (table 1) to individually reflect on the different aspects regarding the development of transversal competences at university. The questionnaire was fulfilled separately, and further discussed in order to write the corresponding discussion.

Table 1. Initial questionnaire for the reflection of different aspects regarding the development of transversal competences in higher education.

<p>1. ABOUT THE INSTITUTION PLAN ON TRANSVERSAL/GENERIC/KEY COMPETENCES</p> <p>a. Is there any institutional project for the development of transversal or general competences in our institution/university? What are its main objectives?</p> <p>b. How many and what are the general competences defined by each institution?</p> <p>c. Has the required acquisition level of the competencies been defined for each year/course? Have acquisition grades been defined for each level of competence?</p> <p>d. Have any courses been defined as control points for specific competences? Who decides the competences being developed in each course? If there are control points, are there any other competences developed in the course?</p> <p>e. Apart from the courses, are there any other context or activities in which transversal competences are worked?</p> <p>f. Does the institution provide specific rubrics to evaluate transversal competences? Are there any other sources available?</p> <p>g. Does university or any specific department provide information or proposal of activities so as to develop specific competences?</p> <p>h. Is the lecturer asked to give a particular mark to each specific competence?</p> <p>i. Does the degree accredit the acquisition of transversal competences somehow?</p> <p>j. What do students know about all these?</p>
<p>2. ABOUT THE LECTURERS' COURSES AND EXPERIENCE</p> <p>a. General description of the course: year, number of students, ECTS credits, assessment activities, transversal competences developed in the course.</p> <p>b. What are the activities proposed to assess generic competences? Have they been specifically designed or other activities serve on this purpose?</p> <p>c. Is the context (e.g. year) taken into account to assess the level of competence acquired?</p> <p>d. How does the lecturer assess transversal competences? Which resources have been used?</p> <p>e. What are the main difficulties identified in assessing transversal competences? Have the activities planned been useful?</p>
<p>3. SOME COMMON AND DIVERGENT POINTS</p> <p>a. Do we work any similar transversal competence in the courses we teach?</p> <p>b. What opportunities and limitations do have small groups vs. large ones, and vice versa?</p> <p>c. Is there any specific useful resource that could be moved from the large to the small group and vice versa?</p>

3 RESULTS

In this section, answers to the questionnaire presented above (table 1) are given and discussed. Lecturers contributing to this paper teach, respectively, at a private and a public institution, located in Valencia, Spain.

3.1 About the institution plan on transversal/generic/key competences

The information given below has been extracted from the websites of each institution.

A. Is there any institutional project for the development of transversal or general competences in our institution/university? What are its main objectives?

Both institutions have specific projects for the development of generic competences. These are based in the development of specifically-defined generic competences. Common points have been identified: employability, to define a strategy for competency assessment, and to certificate the competency profile of the graduates.

B. How many and what are the general competences defined by each institution?

A list of 8 and 13 transversal competences (CT) have been defined by each institution (Table 2). In the case of institution A, other transversal competences are specifically designed for each degree, an example is given (10 CT, degree in Architecture). In the case of institution B, these 13 competences are the common ones for all the degrees offered by this university.

Table 2.

1. TRANSVERSAL COMPETENCES DEFINED BY INSTITUTION A
CT01 – Communication CT02 – Leadership CT03 – Teamwork CT04 – Adaptable to changes CT05 – Initiative CT06 – Problems resolution CT07 – Decision making and planning CT08 – Organization <ul style="list-style-type: none"> • Transversal competences of a specific degree: CT01 – Responsibility (social and environmental) CT02 – Self-confidence CT03 – Awareness of ethical principles (social and environmental) CT04 – Communication skills in native language (oral and written) and English language. CT05 – Interpersonal understanding CT06 – Flexibility CT07 – Teamwork (interpersonal relationships and ability to lead a team) CT08 – Initiative and entrepreneurship CT09 – Time management and planning CT10 – Innovation and creativity
2. TRANSVERSAL COMPETENCES DEFINED BY INSTITUTION B
CT01 – Understanding and integration CT02 – Practical thinking and implementation CT03 – Analysis and problem solving CT04 – Innovation, creativity and entrepreneurship CT05 – Design and project CT06 – Teamwork and leadership CT07 – Ethical, environmental and professional responsibility CT08 – Effective communication CT09 – Critical thinking CT10 – Awareness of modern problems CT11 – Lifelong learning. CT12 – Time management and planning CT13 – Specific instrumental abilities

**C. Has the required acquisition level of the competencies been defined for each year/course?
Have acquisition grades been defined for each level of competence?**

The transversal competence plan for both institutions state that there are level of competences, and these depend on the year or formative moment in which they are being evaluated. Some competences are evaluated during the whole degree, i.e. in all academic years; whereas others not. However, it seems that it is not clear what degree of development is adequate for each academic year or, at least, it is not evident.

Some instructions are sometimes given: e.g. institution B indicates that the assessing strategies must be centred in specific activities developed by students, the most realistic the best, with an adequate level of complexity, depending on the formative moment and the context in which learning is taking place. At the beginning, assessment activities must be less formal, using immediate, frequent and formative feedback, where following-up is imperative. Then, strategies should evolve to more integrating tasks in which students are able to proof their ability to use the different components of one or more competences in situations increasing in complexity.

Some rubrics (open-access or facilitated by the institution in specific repositories or platforms) differentiate among different levels, the descriptors indicating increasing complexity. However, it is not always evident which acquisition level is appropriate for each course. In a more advanced project, institution B refers to three specific acquisition levels for each transversal competence (I, II and III), corresponding (I) to 1st and 2nd year of bachelor degrees, (II) 3rd and 4th year of bachelor degrees and (III) Master degree. Then, different acquisition grades are defined. For example, institution B defines an A to D scale (A. Excellent, B. Good/Adequate, C. In progress, and D. Not achieved).

D. Have any courses been defined as control points for specific competences? Who decides the competences being developed in each course? If there are control points, are there any other competences developed in the course?

Institution A establishes specific transversal competences for each degree (see example in table 1), whereas Institution B establishes specific control points for transversal competences in each degree. This means that each course is control point of one or more than one transversal competences, and lecturers must collect evidences of their achievement and assess them accordingly. Other transversal competences can also be considered in this specific course, but not compulsorily. The same competence may appear as control point in different courses and years, which means that level of complexity should be taken into account. Still, the adequate level of complexity seems not to be defined.

E. Apart from the courses, are there any other context or activities in which transversal competences are worked?

Development of competences is not narrowed to the class context, and universities try to optimize their particularities in order to develop situation in which transversal competences are successfully developed.

Institution A has a specific program in which training transversal sessions in which all the faculty participates are implemented. This is particularly easier when a relatively small number of students are involved. In this case, the training sessions consists of half-day conferences, professional masterclasses, workshops, formative visits or travels, or similar activities. Some specific faculties have developed the "Integrating project", a yearly programmed activity which consist of the activities developed around a university-company or university-government agreement to develop real-case situations and projects. The different courses and subjects join this "integrating project" and work under this frame, in order to effectively link the student to the activities proposed during the whole year, including a final exhibition day.

Institution B also declares to develop transversal competences through different activities apart from the ones concerning the specific courses or subjects. In this case, the university specifically cites 3 lines: 1. Degree curricula/courses; 2. Final Master or Degree Thesis; 3. Extracurricular activities. In the latter case, the projects aims to collect evidences of the acquisition of transversal competences through other activities: University-promoted; promoted by departments, research institutions, services, in the University; or out of the University context (sports, associations, cooperation...).

F. Does the institution provide specific rubrics to evaluate transversal competences? Are the any other sources available?

As stated above, there are some open-access rubrics available on the internet, which may be used to assess different transversal competences. In some cases, the institution facilitates the rubrics through specific sites or repositories (e.g. institution B), and this are available through a specifically oriented search. In addition, teachers usually elaborate their own rubrics, according to their knowledge, other available rubrics and their criteria.

G. Does university or any specific department provide information or proposal of activities so as to develop specific competences?

At present, universities offer lecturers specific courses to learn about competences and how to develop and assess them. These courses are usually voluntary, for which their success depend on the teacher's involvement. Some university repositories also give examples of the development and assessment of specific transversal competences at their own or other's institutions, so as to inspire the practise of the lecturers.

H. Is the lecturer asked to give a particular mark to each specific competence?

While institution B asks to give a grade for each specific transversal competence (A to D, as stated before), institution A is committed to the development of transversal competences but its achievement is considered in the course mark, not separately.

I. Does the degree accredit the acquisition of transversal competences somehow?

This is a key point for Universities nowadays and both institutions do. They are going to certify their graduates' transversal competences by adding to their academic records a specific document or documents with their competencies profile, together with any formative experiences or activities that have contributed to the development of generic competencies (professional training periods, internships, participation in social responsibility or cooperation projects, etc.).

J. What do students know about all these?

Students are aware of the competences project of institutions, as well as to the fact that transversal competences are going to be assessed and further certified.

3.2 About the lecturers' courses and experience

A. General description of the course: year, number of students, ECTS credits, assessment activities, transversal competences developed in the course.

After analysing the answers, authors deduced that there were not significant differences in the ECTS credits of the courses (4.5 or 7.5 ECTS), but there was a significant difference in the number of students per course or class. In one case, the number of students was around 20 (one group), whereas on the other, students taking the course were usually around 90 to 100 (divided in two groups for the theory sessions and 4 to 5 groups for the laboratory ones).

The transversal competences developed in the courses considered for the present study were:

- a) Communication skills in English language; Teamwork; Initiative; Problems resolution; Organization; Awareness of ethical principles; Self-confidence; Time management and planning.
- b) Effective communication; Time management and planning; Critical thinking, Ethical, environmental and professional responsibility.

B. What are the activities proposed to assess generic competences? Have they been specifically designed or other activities serve on this purpose?

The main activities used to assess these competences were:

- Practical exercises related to Statistics. Students had to solve several statistical practices and problems along the trimester by using Microsoft Excel. Each of these exercises had to be delivered in a report form on a specific date. Therefore, the competences evaluated in this activity were: problems resolution, organization and time management and planning.
- Statistical field study. Students had to work in pairs designing and carrying out a statistical field study related to a social concern. They had to collect data by interviewing people and then process them statistically. Finally they had to present their results and conclusions in class. The competences assessed were: Teamwork and organization, since they had to work in pairs, initiative and self-confidence to interview people, time management and planning to present their results before the deadline; and communication skills in English language when they orally explained their work to the rest of the class.

- Statistical analysis of the European data base “Generation what”. In this activity, students of different nationalities had to work in pairs. The aim was to make an exploratory analysis of several items of the database “Generation what”; which includes a wide range of items related to European young people (social, ethical and environmental issues). Students had to statistically compare and analyse data from different countries and extract their main conclusions and results. Then they had to present their findings to the rest of the class. This activity was useful to assess the following competences: Teamwork and organization, awareness of ethical principles, communication skills in English language time management and planning.
- Reports on laboratory sessions. The students had to write a report discussing the results obtained as a result of the calculations derived from the laboratory data. Reports are asked to be designed as a scientific paper, including the sections Introductions, Materials and Methods, Results and Discussion, Conclusions and References. Specific formal aspects are also required for figures, tables, and citations. The reports had to be delivered on due time, by the specific University learning platform. This activity was developed in 2nd year. The competences assessed by this activity were effective communication, time management and planning and critical thinking.
- Research project/work on a specific topic related to the course, including delivery of written work and poster presentation. Specific guidelines were given to develop the project, including deadlines for specific deliverables (index, references, abstract, written work, poster), format requirements (paper format, figures and tables, citations) and specific content aspects. The activity was developed in 4th year. The complexity of the work is designed to develop the competences effective communication, time management and planning, critical thinking and ethical, environmental and professional responsibility. Effective communication was evaluated in its written (paper) and oral forms (poster); time management was assessed by means of the deliverables deadlines; ethical and environmental issues were part of the selected contents; and critical thinking is inherent to this kind of projects.

Activities had not been really specifically designed in order to assess generic competences, instead, they had been adapted from activities developed in previous years (before the application of competency programs). Most of the activities were already planned previous to the competency assessment requirement, and competences were a part of it: ideas need to be clearly expressed (written and oral), they should be delivered on time, a sufficient discussion should be included, and topics of the research works usually included ethical and environmental issues.

C. Is the context (e.g. year) taken into account to assess the level of competence acquired?

Authors agreed on the fact of taking into account the year in order to assess the competence, although this was kind of subjective.

D. How does the lecturer assess transversal competences? Which resources have been used?

Rubrics were commonly used to evaluate generic competences, either self-made or facilitated by the institution programmes or available on the internet. For some specific cases, a yes/no scale is considered, for instance in the case of deadlines accomplishment.

E. What are the main difficulties identified in assessing transversal competences? Have the activities planned been useful?

Authors agreed on the fact that assessing a complex performance is not easy, even if a good rubric is designed and used. In addition, isolating a complex “know how to” is quite difficult, in spite of designing or adapting a specific activity.

On the other hand, and although activities planned were useful to assess the required competences, the debate on if the assessment of competencies separately is really needed or not is not clear to us. Indeed, the proposed activities had been already used in the past to assess students’ performance, without the need for separating or isolating them from the rest of the work. For example, assignments were expected to be delivered on time in any case, and they need to be well written and well communicated.

Therefore, the main difference relies on the fact that a specific mark must be given to the competences performance (and this is only the case of one of the institutions of this study). However, are not they part of the assessment itself? In fact, if competences are the result of a complex know

how, maybe separating them from the global performance is not the best option. As commented above in the introduction section, key competences are not only explicit learning objectives, but they are also implicitly contained in studying since in order to actively participate and succeed in courses, students need strategies of self-directed learning (focusing attention, communication and teamwork skills, or time management). These competences concern self-regulation and include knowledge, self-reflection and action [1]. Besides, when giving a separate mark to a general, transversal or key competence, there is a potential risk of not taking into account the competence performance when globally qualifying the work.

3.3 Some common and divergent points

A. Do we work any similar transversal competence in the courses we teach? If affirmative, are the activities planned similar?

Common transversal competences worked in the courses taught by the authors were those related to communication (written, oral, foreign language), Time management and planning, and ethical and environmental issues. The activities planned to assess them were quite similar: deadlines, reports, guided-works (to discuss specific topics), etc. Therefore, sharing opinions, information and materials (rubrics for examples) is always a way to improve.

B. What opportunities and limitations do have small groups vs. large ones, and vice versa?

Since group size was one of the main differences found between both cases of study, it was considered a good point to focus on. As expected, small groups make it easier to assess competences individually. For instance, when delivering a speech or oral presentation. Individual reports or exercises are also more frequently collected and evaluated when class groups are relatively small. On the contrary, evaluating certain competences in the case of large groups is more difficult and some students invariably “share” their mark, since individual attention cannot be really paid if one lecturer is evaluating up to 100 students per course. Nevertheless, large groups enhance discussions and allow to work on a larger variety of topics and contents, which is in the end very important when developing other competences such as critical thinking or ethical and environmental awareness.

C. Is there any specific useful resource that could be moved from the large to the small group and vice versa?

Although assessment method may be different, activities can always be adapted. For example, an oral presentation can be delivered live, or it can either be recorded or visualized later by the lecturer and/or mates. Or a full report/work can be reduced to a specific part (discussion for example), if critical thinking wants to be assessed. There are many possibilities, although large groups usually represent a limitation in generic competences development and assessment.

4 CONCLUSIONS

The Bologna process has driven a student-centered learning which has affected the whole learning/teaching process, with teachers and students both participating a process of cooperative learning in order to develop useful competences. In the last years, study programs have been designed in order to leave room for all the components that contribute to education, which include competencies beyond a particular discipline. The institutions included in the present work have shown to be very committed with the Bologna process and the compromise of transversal competences development. A list of around 10-13 transversal competences have been defined by each of them and lecturers are asked to evaluate and assess them, either separately or as a part of the assessment procedure. In both cases, development of transversal competences is beyond the class context, and other activities are part of this project.

Some differences have been found regarding the definition of acquisition level and acquisition grades. Sometime it is not easy to find definitions of what level of performance is adequate to what specific year (degree, postgraduate). On the other hand, acquisition grades have been defined officially only in one case (A, B, C, D); in the other case, the lecturer uses rubrics to evaluate the competence, but no specific mark is given or included in the students' qualifications as a separated grade.

Authors do not consider this a drawback since, in fact, general competences are a part of the assessment itself and are the result of a complex know how, for which separating them from the global performance is in most cases a difficult task. According to the literature, the specification of learning

outcomes so that they can be assessed is essential, and a clear definition of the domain being assessed is required [5, 6].

In any case, to give a specific mark to quantify the achievement of a specific general competence is a point to discuss. In our study, it has not make a difference with regard to the success in the competences development. Proposal or adaptation of specific activities to develop a list of generic competences within each institutional plan have been successfully achieved, and the development of the competences has been evidenced, either by qualifying them separately or taking into account them in the global performance.

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