

# AN ASSESSMENT FRAMEWORK FOR THE “ORAL EFFECTIVE COMMUNICATION” COMPETENCE

**Pedro Gómez-Gasquet, María-José Verdecho, Juan-José Alfaro-Saiz, Raúl Rodríguez-Rodríguez**

*Department of Business Organization, Universitat Politècnica de València (SPAIN)*

## Abstract

In the last years, there is an increasing interest in the manner that generic or also called transversal competences (TC) are introduced in the programs. Transversal competences are generic and relevant skills that students have to develop while they are studying the different years of the program. These generic competences are to be assessed within the specific activities developed within the courses. For that purpose, the Universitat Politècnica València (UPV) has designed an internal educational project called “UPV transversal competences” in order to support the general aim of the generic competencies assessment in the degrees. In this line, the UPV has granted various innovative educational projects that provide the assessment and collection of evidences on TC. This paper comes from the work of one innovative educational projects and, deals with the case of the assessment of the “effective communication” TC.

The main purpose of this work is to present an assessment framework for the effective communication competence in postgraduate programmes at the UPV as well as describe a pilot application. This paper presents both the educational experience and main results obtained.

Keywords: Transversal competences, higher education, technical programmes, master degree, assessment framework.

## 1 INTRODUCTION AND LITERATURE REVIEW

The Universitat Politècnica de València (UPV) introduced in the curricula of the new undergraduate and graduate degrees not only the assessment of specific competences but also the assessment of the generic ones. Thirteen generic or transversal competences (TC) were defined and introduced within all the curricula [1]: Understanding and integration (TC1), Application practical thinking (TC-2), Analysis and problem solving (TC-3), Innovation, creativity and entrepreneurship (TC-4), Project design (TC-5), Teamwork and leadership (TC-6), Professional and ethical responsibility (TC-7), Effective communication (TC-8), Critical thinking (TC-9), Knowledge of contemporary issues (TC-10), Continuous learning (TC-11), Planning and time management (TC-12), and Instrumental specific (TC-13).

In 2012, after the completion of the ABET (Accreditation Board for Engineering and Technology) accreditation process of four degrees at the UPV, it was questioned that UPV had defined and implemented systematic procedures to assess the degree of achievement of transversal competences. From this accreditation process, it was concluded that it was necessary to define a general procedure to evaluate the progress and certify the acquisition of transversal competences by students. This issue is not completed yet, and instructors and Universities are developing new approaches to face it such as the works developed by [2], [3], [4], [5] and [6]. Most of the transversal competences were not explicitly defined in the previous degrees and their development and assessment is new for instructors and professors who are specialised in the assessment of specific competences. Transversal competences are to be assessed within the specific activities developed through the subjects/courses. For that purpose, the UPV has designed an institutional project called “UPV transversal competences” in order to guide the general implementation of the generic competencies in the different degrees.

At the operational level, in coherence with the general UPV institutional project, different innovative educational research projects have been developed at UPV to define, propose and implement tools and instruments for guiding the assessment of generic competences. Two of these projects were developed by the authors of the present work who conform the Idomei Educational Innovation Group (EICE) at UPV. These two projects were “Assessment and follow-up of the UPV competence “effective communication” in master degree” during the academic year 2014-1015 [7] and “Assessment of the

transversal UPV competence “analysis and problem solving” in master students” during the academic year 2015-2016 [8]. Similar approaches had been developed to solve this issue by other authors, instructors and Universities such as the works developed by [9], [2], [10], [3], [4], [5],[6] and [11].

The objective of the two previous innovative educational research projects was the development of assessment tools for assessing generic competences at master level so that students knew the assessment indicators of the competences and could focus their efforts on their development and improvement. After the completion of the two projects, it was observed the absence of mechanisms to improve the tool utility. Then, the objectives of the new project were to enhance the student’s understanding of effective communication and aid to collect evidences in quality and number. In order to achieve these objectives, it was proposed to implement mechanisms for these tools using software applications. In addition, it was defined another important objective: assigning students an active role in the assessment process. For that purpose, it was necessary to engage students by using participatory procedures (self-assessment, peer-assessment and/or co-assessment procedures) in order to increase their motivation and performance [12].

This paper is structured as follows. In the next section, an approach to teaching-learning cycle is presented. Then, next section presents an extended framework for designing transversal competences and section four explain how the framework has been applied to oral effective communication. Finally, conclusions of the paper are exposed.

## 2 APPROACH TO TEACHING-LEARNING CYCLE

A transversal competence, like any other competence that we want to deal with an individual, relies on a set of natural capacities that must be strengthened, modelled and combined until reaching the desired ability. The authors of this work share the idea that one can only speak of a competence if one can measure the degree of skill that the individual achieves using it. From this brief reflection the hypothesis is established that all competences can be approached as a teaching-learning process that must be measured with one or several key performance indicators (KPI).

All the processes must have associated one or several objectives, which must be established before the KPIs, being that these are derived from the objectives. Normally, the objectives are multiple and are grouped by dimensions, so that one dimension is linked to several aspect of the same skill.

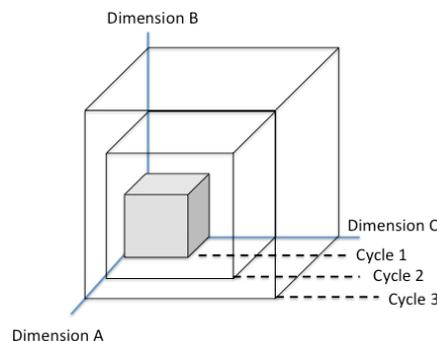


Figure 1. Representation of competence dimensions.

Each of the 13 competence defined by UPV can be subdivided into 3 level. Each level is associated with a training cycle and has its own objectives. Ideally each level is built on the previous one.



Figure 2. Steps for developing teaching-learning cycle.

As can be seen in Figure 2, each cycle must have perfectly defined the objectives of the cycle / and associated KPIs to be able to measure them, the set of teaching activities that allow the student to be

directed towards the proposed objectives, the temporary deployment of activities and finally procedures for analysis and improvement of the process. Although in each cycle the procedure is repeated the contents of the same are different. It must be assumed that in each cycle the demand is increased and defined goals require more elaborate abilities by the students as it can be seen in figure 1.

### 3 E-TELETCO: AN EXTENDED FRAMEWORK FOR DESIGNING TRANSVERSAL COMPETENCES DEPLOYMENT

The Extended TEaching-LEarning process in Transversal Competences (TELETCO) is proposed in [13]. The proposal aims to facilitate the stages of the life cycle figure 2.

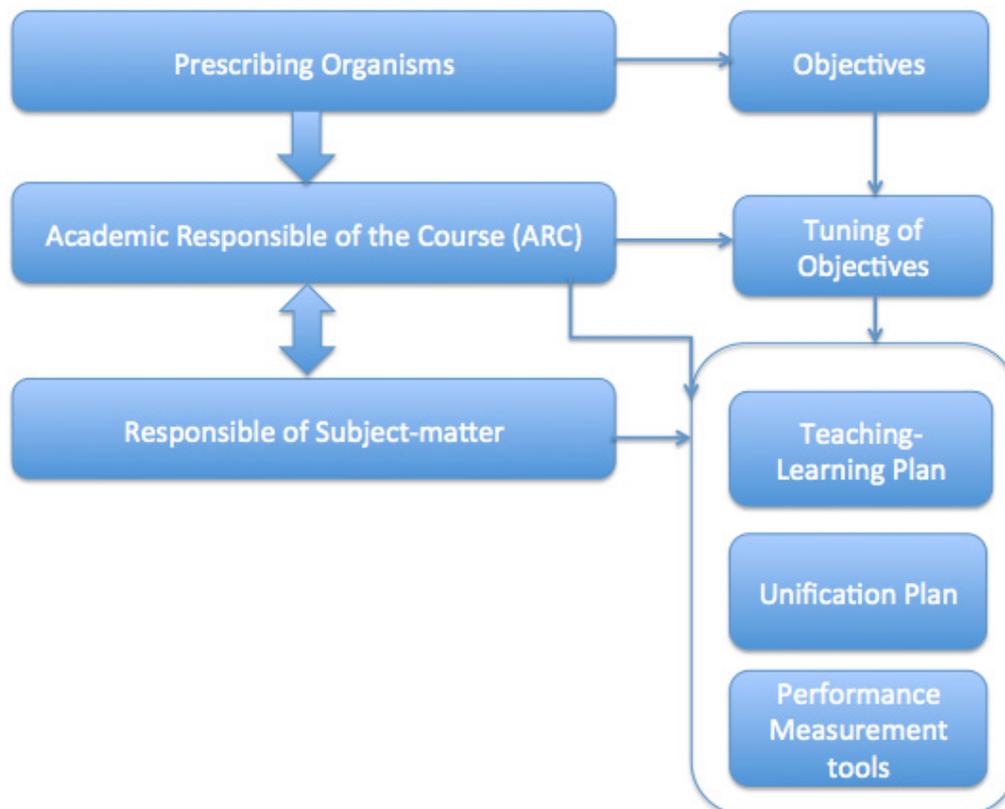


Figure 3. TELETCO framework [13].

As shown in figure 3, the proposal is based on the existence of a set of prescribing organisms that are those that by standards or tendencies in good practices propose transversal competences and define their dimensions and levels in a general way. On the other hand, the Academic Responsible of the Course (ARC) should be able to interpret and qualify such bidders to adapt the title to which they will apply. The ARC must specify and adjust the objectives of the different levels according to the cycles covered by the course.

It can be considered that the operational scope of the teaching-learning process is located in the field of subject matter. They are responsible for the subjects-matter that, together with ARC, must carry out the design, deployment and analysis of transversal competences.

The aspects related to the design must be based on a Teaching-Learning Plan that allows the student to be trained in the selected competition throughout the cycle with a global vision, complete and shared by the most appropriate topics.

The aspects related to the deployment can be flexible and allow the teacher to develop the teaching-learning plan within the subjects. A Unification Plan is proposed that allows us to flexibly deploy skills in the same way in any subject.

Finally, the aspects related to the analysis and improvement are supported by a Performance Measurement Tools that allows to define the measurable ones, to obtain the data, to facilitate its understanding and to start adjustment mechanisms if they were necessary.

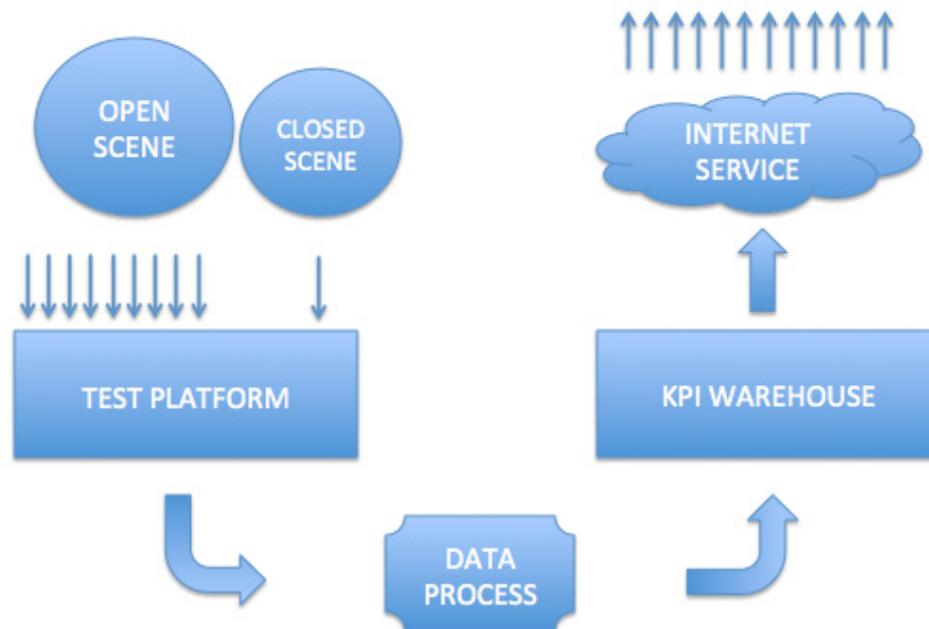


Figure 4. TELETCO framework: extension for performance measure tools.

In this paper, Performance Measure tool of the proposal addressed by [13] is extended. The purpose of the tool proposal is to facilitate data collection and treatment and visualization of indicators. The differentiating part of the proposal is in the form of collecting information and how to display it.

Regarding the collection of information, the framework proposes two alternative or complementary systems. Everything begins with what has been called "open scene" or "closed scene" which is nothing more than the public or private demonstration of a particular competition. These scenes can be evaluation acts, but also other types of non-evaluative acts, but from which evidence can be collected on a concrete capacity.

There are many types of competencies and therefore the needs are diverse. It is understood that both types of scene cover all data collection options. In terms of data, in each scene there are E evidences that can be evaluated by S observers with Q questions about D dimensions. Therefore, in each scene  $E \times S \times Q \times N$  data are generated.

Closed scenes may be linked to written tests where only the author and the teaching team have access. In the closed tests the number of observers S are reduced and data collected would be relatively simple. In the case of open scenes, it is proposed that the tools allow all or a large number of observers to enter data on what they have seen. In open scenes the number of data is much more complex than the closed scenes.

One of the key elements is the existence of a platform for designing test for multiple observers as observers can directly enter required assessments. When the scene is closed and the number of observers reduced the test design can be simple and for this there are several solutions. When the scene is open and the observers are multiple it might be necessary to use question batteries, so that not all observers the same issues or at least not with the same vision.

The TEST PLATFORM should help to design the issues and allow their simultaneous execution by multiple observers during a scene satisfying the requirements presented, as well as the storage of the raw results.

The system must allow a processing of the data to be able to generate values in the KPIs proposed to the competitions from the raw data collected in the scenes. In each scene you can collect data from one or several competences, depending on the design of the activity.

Another relevant aspect is that KPIs should be available to students. In this way the student will be able to have a vision of the evolution of their competences in an aggregated way and of the dimensions that form it in a detailed way. The data processing and the design of the KPI should be done in such a way that values of the same dimension of a given competence collected in various subjects can be added since they are actually contributions to the same aspect.

The final element of the framework would be the internet service through which the student has on-line access to all KPIs.

#### 4 APPLYING E-TELETCO TO THE “ORAL EFFECTIVE COMMUNICATION” COMPETENCE

All the transversal competences of the UPV have been designed to be developed in 3 stages where the basic level is reached in year 1 and 2 of the degree, the means in the year 3-4 of the degree and the advanced during the studies of Master or doctorate. According to the UPV's catalogue of transversal competences, effective communications referred to as CT-8.

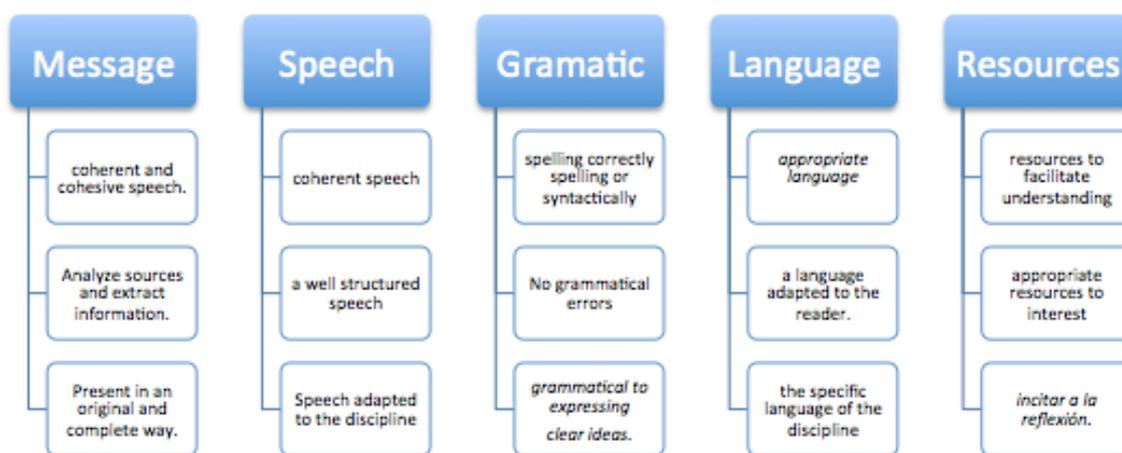


Figure 5. Dimensions by levels of CT-8 at UPV.

Figure 4 shows the 5 dimensions of the CT-8 where each has 3 levels associated with cycles 1, 2 and 3. According to the E-TELETCO framework, the UPV would play the role of prescribing organism, and these would be the general objectives to be achieved.

In this case, the development of the competence in the Master's Degree in Advanced Engineering of Production, Logistics and Supply Chain (MUIAPLCS) with 60 ECTS credits and duration of an academic course is addressed. The Academic Responsible of the Course should adapt the last level of the 5 dimensions of Figure 5 to the scope of the master. By the way, the dimension related to "The speech" could be transformed into "Speech adapted to the supply chain discipline". It could be considered the result of the tuning of objectives proposed in the frame. In this case this task is reviewed every 5 years or in case of redefinition of transversal competences by the UPV.

The MUIAPLCS select 2 subjects to each competence, corresponding one to the first semester and another to the second. The objective is to be able to observe the evolution of the student throughout the course. This assignment is reviewed each new academic year.

Figure 6 shows the adaptation of the proposal for the measurement of transversal competence 8, in its aspect of oral communication. In this case it has opted for open scenes, in format public presentation. The platform used to evaluate has been the one currently available at the UPV, known as PoliformaT (based on the SAKAI platform v. 11). The data processing has been done with the excel tool of MS, and the data has been stored in a database based on MySQL. Problems related to internal regulations as well as data protection laws internet accesses have not been implemented.

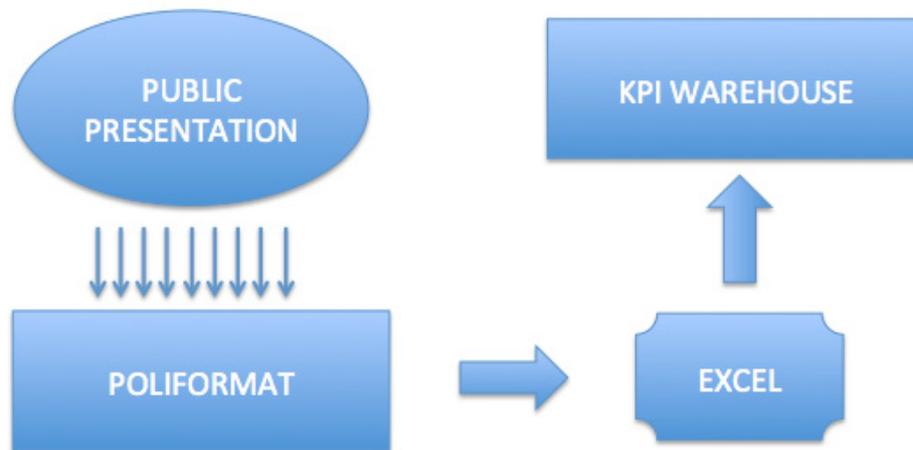


Figure 6. Performance measure tool adapted to CT-8.

After the competence self-assessment, students must assess real presentations performed by their peers at class. In each course, each student must present an oral presentation (open Scene) regarding a specific topic at class. Instructor is in charge of assessing the presentation for obtaining the mark and at the same time peers are in charge of assessing the presentation for assessing their own knowledge of the competence. Each student is assigned to assess only a set of presentations and also using a set of questions so that students do not have to assess the whole questionnaire. It is better considered to assess only some questions in order to focus the available time during the presentation in some specific questions. All the questionnaires completed (instructor and peer questionnaires) are filled in using Poliformat (Platform) so that the collection the responses are automated and easy to compute.

The project has been applied to two master courses belonging to the Higher Technical School of Industrial Engineering at UPV (Table 1).

Table 1. Application of the project in three master courses.

Course	Course Type	Degree
PMS	Core	Master in Advanced Engineering Production, Logistics and Supply Chain
PPEED	Elective	Master in Advanced Engineering Production, Logistics and Supply Chain

After collecting the data, the analysis of results indicates an increasing interest in the satisfaction of students (see satisfaction survey results coming from students in Table 2).

Table 2. Overall student satisfaction survey results in the three courses.

Course	Overall student satisfaction 2015-2016	Overall student satisfaction 2016-2017	Satisfaction Increase (%)
PMS	9.22	9.08	-1.51%
PPEED	8	8.89	10%

As a result of the implementation of these tools, satisfaction has increased by 10% in one of the courses, although the other has remained unchanged. In any case, still lacking to launch the part of displaying of data that we believe can be an important impulse.

## 5 CONCLUSIONS

This work has allowed contextualizing the process of development and acquisition of transversal competences and locates their development beyond the scope of a subject. In addition, a framework has been extended which, linked to the concept of life cycle, allows us to consider the elements

necessary to achieve the objectives in acquiring the selected transversal competence. All of this has been applied to transversal competence related to effective oral communication.

## ACKNOWLEDGEMENTS

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