



# DevalSimWeb

Development of Professional Skills through Participatory Evaluation and  
Simulation Using Web Tools

Executive Report of the Joint Report on Selection of  
Transverse Competences to Evaluation in Bolivia, Colombia,  
Costa Rica and Ecuador

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ALPHA III (2011) -  
10



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The project aims to improve the quality of Latin American higher education through the development of the evaluative competence in professors and students, with the purpose that students complete their studies successfully and integrate into working life. In its initial phase, applied research is conducted on the topics of: student dropout, job placement, cross-disciplinary competences to evaluation from the perspective of students and professors work skills from the perspective of companies.

The project is complemented with another phase in which a training program is designed and implemented for students and professors.

The participating European universities are: the University of Cadiz, general coordinator of the project and Durham University. The Latin American partner universities are: University of Antioquia, University of Costa Rica, Pontifical Catholic University of Ecuador Ibarra Campus and the Salesian University of Bolivia.

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## Objectives

Competency-based preparation is a topic of great relevance in the formation given to the students of higher education. It can be noted that different projects for competency-based education are being developed nowadays. They aim at a common objective: seeking improvements in the quality of education, the articulation between the education sector and the productive sector and the adaptation of higher education systems to the international frameworks.

The DevalSimWeb project sets out to systematize and carry forward what has been achieved so far in some Latin American universities. To do this, a process of inquiry to implement some strategies of intervention has been followed. In addition, DevalSimWeb has committed to meet the following objectives:

- Define intervention strategies to increase the competence of university students in a set of cross-disciplinary competences.
- Determine the importance, utility, development and the action level given to the selected competences by the Latin American universities surveyed.
- Determine the relevance, utility, development and the action level given to the selected competences by local companies.

## Sample by Informants and Total

As part of the method, the participating universities in the study were required to select a university of different legal nature in order to analyze how competences-related work is done by professors. This requirement was fulfilled in 75% of the participating universities.

The survey to the professors was applied through personal visits and institutional emails. The purpose of the survey was knowing which competences are taken into account in the training processes developed by them.

| Country    | Colombia:   |     | Bolivia     |     | Ecuador:    |    | Costa Rica  |     | Total of professors surveyed |
|------------|-------------|-----|-------------|-----|-------------|----|-------------|-----|------------------------------|
| University | Respondents |     | Respondents |     | Respondents |    | Respondents |     |                              |
|            | UdeA        | 297 | USB         | 160 | PUCESI      | 36 | UCR         | 99  |                              |
|            | Medellin    | 110 | UMSA        | 23  | UPEC        | 74 |             |     |                              |
|            |             |     |             |     | UTN         |    |             |     |                              |
|            |             |     |             |     | UTC         |    |             |     |                              |
| UTEQ       |             |     |             |     |             |    |             |     |                              |
|            | 407         |     | 183         |     | 110         |    | 99          | 799 |                              |

Table 2.1 Total of Professors surveyed by University.  
Source: Partner universities: UdeA, PUCE-SI, UCR, USB (2012)

The study was conducted with thirty-six (36) companies, nine (9) for each participating university.

To respond to the objective and determine the relevance, utility, development and the action level given to the competences by the companies selected, these companies should have a plural character in terms of the economic sector (primary, secondary, tertiary), the type of capital (public, private, mixed) and the size:

- Large (more than 250 employees)
- Medium (between 50 and 249 employees)
- Small (between 11 and 49 employees)

27 surveys were conducted via e-mail and 9 were applied face-to-face through concerted visit.

| Country      | Companies |    |    |         |         |       |       |        |       |    |
|--------------|-----------|----|----|---------|---------|-------|-------|--------|-------|----|
|              | Sector    |    |    | Capital |         |       | Size  |        |       | T  |
|              | P         | S  | T  | Public  | Private | Mixed | Small | Medium | Large |    |
| Bolivia      | 0         | 3  | 6  | 1       | 8       | 0     | 6     | 1      | 2     | 9  |
| Colombia:    | 3         | 3  | 3  | 1       | 6       | 2     | 3     | 3      | 3     | 9  |
| Costa Rica   | 3         | 3  | 3  | 1       | 6       | 0     | 4     | 1      | 4     | 9  |
| Ecuador:     | 1         | 4  | 4  | 1       | 6       | 1     | 3     | 3      | 3     | 9  |
| <b>Total</b> | 7         | 13 | 16 | 4       | 26      | 3     | 16    | 8      | 12    | 36 |

Table 2.2 Characteristics of the Surveyed Companies.  
Source: Partner universities: UdeA, PUCE-SI, UCR, USB (2012)

## Description of the Methodology and Analysis Used

The institutional proposals place us in front of a common reality for all the participating universities. This reality refers to the European offer of programmes and projects to improve the quality of education in Latin America through competences, the institutional initiatives to fulfill the demands of the academic and scientific environment and the diversity of current definitions for competence, which hampers their implementation to the programmes and the decision making.

Accordingly, several definitions of competence were found in each of the countries, with a major use in the higher education context. Due to this diversity, competence was defined for the conduction of the study as "a latent attribute for the development of a profession that simultaneously involves knowledge, values, responsibilities, skills, abilities and ways of making"<sup>1</sup>

In correspondence with the chosen definition, we asked about how professors design the development of competences in the student's academic training. Among managers of human resources of the companies, we look into what competences are relevant in the personnel selection processes.

The procedures followed for the implementation of instruments were:

- Identification of the target population.
- Selection of the sample, taking into account statistical and qualitative criteria: Basic identification of the participants.
- Contact through various means: direct chiefs, e-mails, personal contact. Invitation to participate in the project.
- Application of instruments.
- Tabulation and application of statistical measures for data.

The instruments used for information gathering were two surveys carried out by members of the team of the four universities. These surveys had internal validation processes that considered the following aspects: clarity, consistency and accuracy.

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<sup>1</sup>Survey model for professors proposed in the programme, DevalSimWeb, 2012.

The 10 competences that were asked to professors and human resources managers were:

1. Analytical judgment.
2. Planning.
3. Sense of ethics.
4. Reasoned communication.
5. Negotiation and participation.
6. Critical thinking.
7. Decision making.
8. Teamwork.
9. Problem solving.
10. Adaptation to change.

The study of competences was conducted under the measurement of relevance, utility, development and performance criteria. The analysis of the data obtained through these criteria, applied to the work performed by the professor, in the developing of competences as well as the consideration that human resources managers have about competences in the recruitment processes in companies, was held following two approaches.

The first focused on the calculation of mean values, assuming an equal weight for each value on every level: professor/company, university/country and criteria (relevance, utility, development and performance). The second approach is focused on grouping the data using "clustering" techniques.

#### - **Mean Value Analysis**

The analysis was based on the data provided by each University. The data were calculated as mean values for each of the competences in the different criteria.

#### - **Cluster Analysis**

K-Means and Fuzzy were the two types of clusters used, with the premise of locating approximately three groups. In addition, the analysis had two major divisions: professors (universities) and companies. For both categories, the data was considered in two ways : separated by country and using the media. Relevance, utility, development and performance were the criteria used for the independent variables in

the clustering.

## Results and Conclusions

Analyses made it possible to identify competences with greater relevance, both for professors and for companies. However, it is important to consider that the variations between competences were considerably small, which gives it an especial value in the practical sense.

When reviewing the compendium of information obtained using the two types of analysis, we observed the following:

- For data from professors, the mean value analysis allowed to validate the competences selected for the cluster analysis. These competences would be: analytical and critical judgement, sense of ethics, decision-making, teamwork and problem solving. These five are those having the highest mean values, all between 86% and 88%.
- In the case of companies, both the analysis of mean values and the cluster analysis, allowed to define the same groups where most relevant competences were teamwork and sense of ethics.
- Between groups of competences of greatest relevance, only the ethical sense was found as a common factor between the opinion of professors and companies, being the best valued in both scenarios.
- The competence of negotiation and participation constantly stood out as the one of lesser relevance.

Based on the above findings, it is possible to point out the similarity in the competences assessment, both by universities and by companies, and the little deviation between the data corresponding to each variable consulted.

A first level of analysis reveals the importance of the mentioned competences for all populations surveyed, since the valuation range lies between 70 and 100%. In the case of companies, the performance of critical thinking and the development of negotiation and participation are read as outliers with a 62.96% and the 66.66% for acting on the development of negotiation and participation

Another aspect to highlight is the high valuation that universities gave to four competences closely related to their training projects. They highlight the relevance, in the ethical sense, as responsible actions arising from the commitment to the axiological principles; the levels of development of critical thinking, in the review of their actions and those of his companions to be partakers of their training processes;

and the usefulness of analytical and critical judgment, as long as it evaluates situations, understands them and foresees their consequences. These affairs converge in the assessment given to the action in the resolution of problems.

In companies, the sense of ethics is emphasized in both relevance and action and development levels. In other words, the urgency of a responsible performance by axiological principles is assumed. One of the readings of this result, stresses the importance of integrating it into the processes of academic training to contribute to the formation of a professional with values in line with the principles of his/her society, since professionals should be trained not only on providing competent services to their country, but on the possibility of providing their professional services in international contexts. This study demonstrates that the "sense of ethics" is a highly valued competence to function as professional in a company either public, private or mixed.

Another competence of high value is teamwork in utility and level of development, a clear demand for the commitment of its employees for common tasks and shared objectives, in order to maintain a conducive learning environment.

With respect to the competences with the lower scores, it was found that in 75% of the cases the universities participating in this study agree to qualify with lower value "Negotiation and participation Competence". A hypothesis in this regard is made based on the performance that this competence assumes in others defined in the study, namely: decision making, analytical and critical judgment, and teamwork.

The competence which has the lowest identification value when making recruitment processes in the participating companies was: "Reasoned Communication".

The findings show several issues that are worth highlighting:

- Competences, although in the academic discourse of a decade ago were not called as such, their relevance, usefulness and levels of development and performance have been present in strategies and training proposals of the surveyed universities.
- There is a breeding ground for the development of training courses for both professors and students.
- There is synchrony between the expectations and the considerations that universities and businesses have on competences.





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