

## THE ROLE OF UNIVERSITIES IN THE DEVELOPMENT OF COMPETENCE-BASED EDUCATION

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### ABSTRACT

*In the context of the European Higher Education Area, the term "competence" is at the heart of the terminology used in relation to teaching. Parallel with it we find the term "learning outcomes", a concept that is also emphasised, and, as a backcloth, the question of "qualifications frameworks", among which the main point of reference is the European Qualifications Framework. Within the framework of the EHEA, the starting point for curriculum development is formulation of competences that students have to acquire during the learning process. This paper should give recommendations for formulating competences with competence analysis alumni and employment of Mechanical engineering.*

**Keywords:** competence, education, university

### 1. FORMULATION GENERIC AND SPECIFIC COMPETENCES

From the very start of the discussion of the question of competence, a classification of competence has been established so as to organize them into different categories. In our proposal we simplify these classifications by merely dividing them into generic (i.e. transversal or across-the-board) and specific competences, on the basis that the greatest possible simplicity will give the greatest possible chance that the system will be applied.

The difference between generic and specific competences is clear: the generic category refers to transversal or across-the-board competences that apply to different fields of knowledge. By specific we refer to particular aspects concerning a given field of knowledge.

As an example, the generic competences at the University of Girona are the following:

- Use of English,
- Effective collection and selection of information,
- Use of information and communication technology,
- Team-work,
- Oral and written communication,
- Evaluation of the sustainability of students' own proposals and actions,
- Analysis of the ethical implications of professional actions,
- Design of creative proposals.

The following are examples of specific competences:

- Establishing priorities, aims and objectives for the treatment. (Psychology),
- Identifying and describing how the relationship between the natural world and cultivation is shown in different terrains. (Geography),

- Discussing and providing legal arguments in relation to various sections of the legal code. (Law)
- Designing courses of treatment intended for individuals, families or groups, and evaluating their impact and making appropriate adjustments. (Nursing),

The entire content of a given course is thus included in the list of competences for the course concerned, in such a way that the list of competences (both generic and specific) makes up a profile of the graduate. This constitutes what may be called the Competence Catalogue corresponding to the course concerned.

## **2. COMPETENCE-BASED LEARNING VERSUS CONTENT-BASED LEARNING**

Competence-based learning is not a concept that can easily put down firm and healthy roots. The tradition of learning based on the acquisition of a specific content is long and well-established. For this reason this question needs to be approached with a clear vision.

What ultimately changes is the focus of the learning process. In the content-based model, content is at the core of the process and the objective is for students to acquire this content. It is thus a model based on the transmission of this content. In the competence-based model, the focus is on the use of the content, and its significance in relation to society and its evolution. This is a more constructive model. There is another, extremely direct response to this argument, which is to remark that university students have always acquired knowledge (to a greater or lesser extent depending on how much they studied or the university concerned), and, once their studies were finished, have always had the nous to apply this knowledge wherever and whenever necessary.

This counter-argument is undoubtedly valid. The difference between the two paradigms, then, is that in the one case the educational institution aims to provide the knowledge and its application is "delegated" to the individual initiative of the graduate, while in the new model the use of the knowledge concerned is dealt with directly and explicitly during the learning and teaching process within the educational institution itself.

It is, then, ultimately a question of focus, so that the focus on the knowledge acquired becomes a focus on competence, i.e. the use to which this knowledge is put. It is of course clear that the knowledge needs to be present before it can be used, which is tantamount to stating that content continues to be the basis of the learning process.

This approach is accompanied by a certain change of roles:

- Content-based model    Competence-based model
  - Student's role    To learn content    To acquire competence (i.e. reflective, constructive involvement based on content)
  - Lecturer's role    To teach content    To guide the building of competence (based on content)
- As a conclusion it may be stated that competence-based learning does not exclude content-based learning, but rather goes a step further, while at the same time giving the student greater responsibility.

We can, of course, identify particular educational centres, universities or lecturers that have always approached the learning process from this viewpoint, and for whom this reform thus represents no change at all. This is clearly the case. The learning model we propose is in fact based on existing principles that are already considered to be valid and capable of being extrapolated, which is probably equally true of the majority of reforms in any field. It is not so much a case of inventing new approaches, as of extending good ideas that already exist.

## **3. COMPETENCE RESEARCH ANALYSIS IN BOSNIA AND HERZEGOVINA**

In Bosnia & Herzegovina 131 questionnaires were filled in total. In both studies (Economics and Mechanical Engineering) 71 questionnaires for employers were completed, while 60 questionnaires were filled by alumni. 41 alumni completed the Mechanical engineering questionnaire. On the other hand 30 employers of Mechanical engineering alumni filled the questionnaire.

46,7% of the respondents answered that they are very satisfied with the quality of the work performance, 43,3% are satisfied and only 10% answered that they feel neutral. (Figure 26) No one was dissatisfied or very dissatisfied.

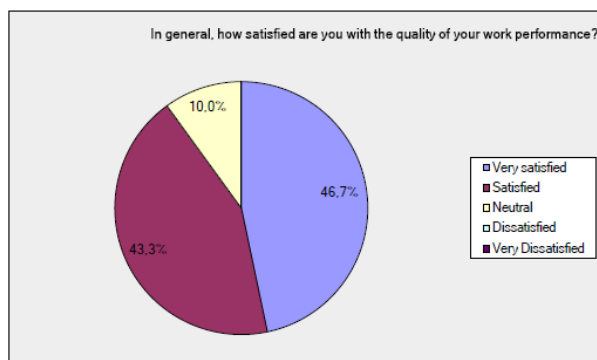


Figure 1. Degree of satisfaction with work performance (Bosnia & Herzegovina: Mechanical Engineering - alumni questionnaire) (original illustration)

### 3.1. Analysis of specific competences

Table 1 shows how useful specific competences are regarding the respondents' performance in their current job activity. The specific competences taught in the Mechanical Engineering degree programme are valued relatively similar by alumni, but in general they are perceived as useful.

Table 1: Usefulness of specific competences (B&H: Mechanical Engineering - alumni)

Answer Options	Strongly agree	Agree	Somewhat agree	Neutral	Disagree	Don't know	Response Count
1. Methodological management approach in maintenance	48,8%	48,8%	2,4%	0,0%	0,0%	0,0%	41
2. Modern concepts of maintenance planning	46,3%	53,7%	0,0%	0,0%	0,0%	0,0%	41
3. To plan, project and organize production systems and processes	39,0%	56,1%	4,9%	0,0%	0,0%	0,0%	41
4. To be able to build and manage production and business systems in computer integrated production	46,3%	51,2%	2,4%	0,0%	0,0%	0,0%	41
5. Evaluate persistence of machining materials built-in machines and equipment	51,2%	46,3%	2,4%	0,0%	0,0%	0,0%	41
6. Usage of basic knowledge in mechanics (static and dynamic processes, machine and engineering balanced conditions)	41,5%	53,7%	4,9%	0,0%	0,0%	0,0%	41
7. To be able to produce a product using production technologies	51,2%	46,3%	2,4%	0,0%	0,0%	0,0%	41
8. To be able to develop new production technologies	51,2%	39,0%	9,8%	0,0%	0,0%	0,0%	41
9. To be able to develop and manage engineering (modeling) of technical IT	46,3%	46,3%	7,3%	0,0%	0,0%	0,0%	41
10. To be able to develop new products	39,0%	56,1%	4,9%	0,0%	0,0%	0,0%	41
11. To manage environment reducing bad influences	36,6%	56,1%	7,3%	0,0%	0,0%	0,0%	41
12. To evaluate environment quality	46,3%	43,9%	9,8%	0,0%	0,0%	0,0%	41
13. To analyze, plan and solve problems in energy systems	43,9%	53,7%	2,4%	0,0%	0,0%	0,0%	41
14. To manage energy system condition	53,7%	36,6%	9,8%	0,0%	0,0%	0,0%	41

15. To use methods and equipment for measuring mechanical indicators in machine engineering	51,2%	41,5%	7,3%	0,0%	0,0%	0,0%	41
16. To apply state-of-art methods of product testing	47,5%	45,0%	7,5%	0,0%	0,0%	0,0%	40

Source: Competence Survey Report, 2011.

### 3.2. Analysis of generic competences

Table 2 shows that most respondents think that the listed generic competences are useful for their job activities. A huge majority of respondents agrees or strongly agrees to the question mentioned above for each generic competence.

Table 2: Usefulness of generic competences (B&H: Mechanical Engineering - alumni)

Answer Options	Strongly agree	Agree	Somewhat agree	Neutral	Disagree	Don't know	Response Count
1. Creativity	36,6%	58,5%	4,9%	0,0%	0,0%	0,0%	41
2. Flexibility	48,8%	43,9%	7,3%	0,0%	0,0%	0,0%	41
3. Teamwork and Relationship Building	39,0%	53,7%	7,3%	0,0%	0,0%	0,0%	41
4. Critical/Analytical	39,0%	51,2%	9,8%	0,0%	0,0%	0,0%	41
5. Self and Time Management	34,1%	56,1%	9,8%	0,0%	0,0%	0,0%	41
6. Leadership	41,5%	46,3%	12,2%	0,0%	0,0%	0,0%	41
7. Ability to see the bigger picture	39,0%	51,2%	9,8%	0,0%	0,0%	0,0%	41
8. Presentation	43,9%	46,3%	9,8%	0,0%	0,0%	0,0%	41
9. Communication	41,5%	53,7%	4,9%	0,0%	0,0%	0,0%	41

Source: Competence Survey Report, 2011.

## 4. CONCLUSION

The data of competence survey illustrates the importance of competence-based curricula development in institutions of higher education. As the requirements for graduates are always in a change process, effective labour market feedback systems are indispensable for adjusting the eight curricula and programs from Macedonia, Montenegro, Serbia and Bosnia & Herzegovina to meet the needs of society and industry.

The results show that the 8 participating degree programme are performing relatively well in teaching competences that are demanded by the industry of their country. Almost every alumnus is telling that during their study time they have acquired specific as well as generic competences to fulfil the tasks in their jobs. The interviewed employers on the other hand confirm this impression, telling the alumni working for them are prepared for the requirements of their jobs.

The results from the alumni as well as from the employer surveys also propose that the specific and the generic competences are essential for the future career development of the alumni of the 8 degree programmes surveyed.

Thus the data suggest that the partaking institutions are performing well, but also that there is space for improvement to reach the objective of offering excellence in teaching for their students.

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