ADAPT2JOBS - A SUCCESSFUL PROJECT

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Abstract

The paper aims to share the results of developing new and innovative courses, delivered via an online platform. Moreover, the endeavor consists in adapting the existing curricula to the job market requirements especially by developing new skills and competencies to undergraduates from three different fields of study: economics, social sciences and architecture.

Computer-based learning becomes more attractive to young people due to the delivery of the online course content which is provided in a innovative and attractive structure (digitized lessons), as a result of a joint venture between academia and IT experts.

The research methodology consists in analyzing the national context of computer-based education, identifying the core skills and competencies required by the employers and developing measurements to assess the effectiveness of the computer-based learning.

What gives value to our research is the direct contact with students during the entire process starting with digitized lessons usage, assessing the learning outcome and finally providing evidence of learning effectiveness.

An online survey is currently run in order to capture the learning experience as it is perceived by students that are testing our "products". Valuable information will be available soon and a set of improvements will be in place in order to maximize the learning outcome.

Keywords: curricula, digitized lessons, skills, competencies, computer-based learning.

1   ADAPT2JOBS - FROM IDEA TO REALITY

An interesting study [1] has been conducted, on University Business Cooperation (UBC) at European level and one of the study objectives was to find out "why do some academics and higher education institutions (HEIs) engage in UBC and not others?" It is widely admitted that Europe strongly supports the cooperation and integration and higher education should play an even more important role. Moreover, the UBC is momentous, being an important driver of the knowledge-based economies. The study results revealed the fact that the cooperation between HEIs and business in Europe is still in the early stages, most academics are not engaged at all in UBC (40%) or became involved to a low extent (20%) at institutional level. Authors have identified eight different areas of cooperation of which two rise our interest: curricula development and delivery and lifelong learning initiatives. UBC, while offering more direct, measurable and promotable benefits, are the most developed ones, mostly because business representatives are result-oriented and are looking for feasible benefits. Less developed cooperation can be found in more academic cooperation types (i.e. lifelong learning and curriculum development and delivery), whilst other 'less measurable' cooperation types that provide a more indirect benefit and little ability to promote, such as governance and mobility of academics, are the least developed types of UBC.

Based on the above-mentioned study outcomes, a small group of academics from Spiru Haret University in cooperation with a young team from Siveco Romania - a successful ICT company, have joined their efforts to develop a project proposal meant to address the UBC framework especially on the area of curriculum development and delivery. The idea started from the past experiences of both (academia and ICT professionals) on using computer-based teaching, e-learning platforms and blended learning systems. Also, a needs analysis [2] (as a result of a brainstorming session) revealed an important gap between the skills and competencies developed by the university programs, on the one hand, and the expectations of the Romanian employers, on the other, in relation to graduates performances in using these skills in practice.

1.1 Project at a glance

The project Adapt2jobs[1] has been initiated as relying on the idea of tackling the university-business cooperation in a new and innovative framework, namely involving business representatives in the curricula and courses syllabus design in order to meet the job market requirements for our graduates.

Based on own research results along with UBC status in Europe and Romania, we focused our creative efforts on one of the eight ways in which HEIs and business environment can cooperate: we named it "curriculum development and delivery". We have written a project proposal which was submitted to the national call for proposal "Quality in higher education", launched by the Structural Funds Management Authority. The project proposal was accepted for financing, after a rigorous evaluation of POSDRU. The Human Resources Operational Program (POSDRU), EU Social Cohesion Funds, represents the most appropriate financing opportunity to build, to develop and to benefit from the UBC in Romania.

The cornerstone of the project was to develop an e-learning ecosystem, based on the idea that an UBC ecosystem is understood as a system where stakeholders can contribute directly to the 4 Pillars of UBC which consist of (i) strategies, (ii) structures and approaches, (iii) activities and (iv) framework conditions. Academics, students and business representatives were targeted in order to contribute in developing new or improved courses which enhance students' knowledge and their ability to use it in solving practical problems, as expected by the employers. The business representatives involvement consists in summarizing the current labour market requirements in term of skills and competencies that HEI graduates should meet.

The eighteen-month grant, Adapt2jobs, started in mid-May 2014 with an extensive study on the existing situation. A curricula evaluation vs. the job market requirements was undertaken and some relevant outcomes emerged as crucial: a strong focus on practical issues, better communication skills, more market-oriented courses, enhancing the student's creativity and innovation. Apart from these core results, the participants agreed upon the fact that HEI curricula must be designed today for tomorrow professions and needs, due to the rapid changes that knowledge -based societies have to face. Three academic domains were chosen: economics, social sciences and arts & architecture based on the University's profile, labour market trends in Romania and the feedback provided by alumni. A number of seven courses were selected to be included in the project.

Within the social sciences domain, the two courses, *Cultural project management* and *Strategies of communication for personal development* aim to improve multicultural mobility and effective communication skills in a wide range of professional and cultural contexts as well as flexibility and adaptability of close-related sciences like history, anthropology, sociology and psychology; within the economic sciences domain, the three courses, *Market survey analysis, Budget and bursary* and *International finances* target the ability to use the technologies and methods for budgetary planning, international finances adaptability to the mobility of the market requirements and business environment marketing information analysis;; within the art & architecture domain, the two courses, *Contemporary technologies in architecture* and *Entrepreneurship and visual communication in architecture* view awareness over the present state of architectural development in Romania and skills of branding and personal branding for architectural project marketing. Members in the project started developing both the scientific content and the digitization process. Later they had to perform a test run research for evaluating and measuring the learning effectiveness and efficiency.

The project's national and international visibility is a major concern of the management team, therefore a marketing communication strategy was developed: special attention was paid to brand creation and promotion, results dissemination events, one of the main goals being raising the general public awareness on computer-based learning.

1.2 Project's framework conditions and innovation

The success of the project's implementation depends to a great extent on: management, organization, strategic vision, structures created to make the partnership work and to support the decision-making processes. The project strategic plan was setup and specific activities were detailed: research, course content development, course content digitization and pedagogical approach of the computer-based learning process. Specific roles were assigned to experts and a quality management system was in

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[1] *Adapt2jobs* = The adaptation of the the curriculum and the educational package to the job market requirements, POSDRU/156/1.2/G/141179, www.adapt2jobs.ro

place. Ethics in research and project implementation was ensured through a Code of ethics and all experts comply to the ethics rules.

A set of methodologies and procedures were drafted, discussed, improved and approved. Worth mentioning are the following: management procedure, research methodology and procedures, communication strategy, media planning, financial procedure, decision-making process, etc Making these work ensures a proper functionality of the project as an integrated system which is able to solve all disfunctionalities and allows the system to regulate itself.

Once the framework created, Adapt2jobs is running smoothly and first outcomes are becoming public: recently all 7 courses where available on the portal, students access was ensured through a secure log in, digitized course content is tested by ICT and academic experts making us confident that the course test running process can be started.

Students will be able to experience learning in two forms: traditional learning and computer-based learning. Traditional learning is a common practice in all the three domains, printed course content is provided and for the same course, students are advised to use the course digitized content as a learning experiment, being invited to share their opinions and suggestions with us. A survey is conducted to capture students' perceptions/opinions on practical aspects: the basic digital skills needed to use the system, evaluate their learning effectiveness, and their capacity to identify the knowledge progress accomplished. Fig.1 illustrates the course content delivery, where concepts and terms are highlighted and a set of hyperlinks give access to the terms definition/explanation.
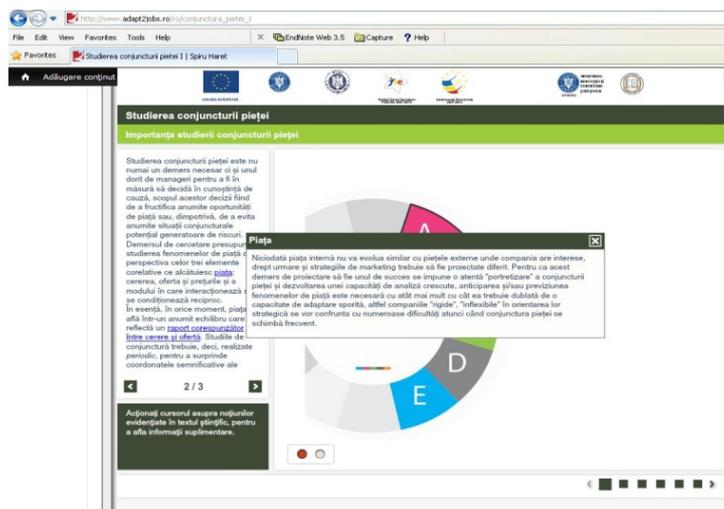

Fig.1 Print screen of the digitized course content - sample of scientific content delivery.

The course content was designed to meet a set of pedagogical criteria which enable students to understand, to internalize and to apply what they have learned. Looking at the Bloom's taxonomy of learning, our digitized courses help students to improve cognitive, affective skills by: remembering what they have read, understanding, applying, analysing and finally creating new paths of learning. Each content frame is designed to give easy access, to follow a logical chain, to provide simulation for formulas (Fig.2) and to access self evaluation.

Fig. 2 Simulation module - students learn how to apply a formula, to calculate and to analyse the result.

The innovation consists in making available the course content in a more structured form which stimulates the students curiosity to discover more about it, to practice on simulation modules and to enhance students responsibility in managing their own learning process.

2 COMPUTER-BASED LEARNING VS TRADITIONAL LEARNING

Computer-mediated learning has been reported as being preferred by students in comparison to traditional learning. Students have described e-Learning as more effective and interactive. Even starting in the seventies and eighties, the results were better following the use of a computer. It is true that e-Learning comprises more structural elements that belong to traditional methods such as group discussions or presentations of new ideas and concepts to the students, as well as examples and arguments to support the views presented. Furthermore, the contents of the course can be organized in chapters and in a cohesive serial but, conversely, there are advantages included in e-Learning that are specific to this particular teaching method: the time for chewing the information given is way longer, therefore retention is better; students can interact with the instructor as well as between them in a freer and inhibition-free environment; open discussions benefiting from an equal share of time and attention from all members of the group; time to respond to various tasks is 24/7; graphics mirage exercises a constant fascination on the brains of the students, the possibilities of technology these days being virtually infinite.

As a result, according to Justin Marquis [3], students become more committed, more self-aware, more responsible, more responsive and take more pleasure in the process of education.

The following table presents some results concerning e-Learning vs. traditional learning:

Table 1 E-Learning vs. Traditional learning.

	Traditional Learning	e-Learning
Lesson Structure	The lesson structure is imposed by the teacher	The group dynamics dictates lesson structure
Time division	The teacher is responsible for time division according to the lesson plan	Time division is shared equally between the group members
Educational process location	The location is imposed by physical factors and presupposes transportation of students (costs, time, energy and stress)	The location is not fixed requiring only a PC

Didactic auxiliary materials	Didactic materials supporting the educational process must be provided by the teacher	Didactic material is pre-thought of and structured by professionals in IT&C
Teacher's role	Authority	Guide
Curricula	The teacher conducts the learning process according to the pre-established curricula	Learning process relies on various databases on the Internet, more sources of information; the student participates in choosing the subject matter
Motivation	Low; the subject matter is distant from students	High; the subject matter is closer to the student and the use of technology gives them a boost of motivation
Learning methodology	Mainly whole class and sometimes group activities or individual activities	Mainly individual activity and group work
Oral communication	The teacher talks more than the student	The student talks more than the teacher
Learning process	The students learn "what" and not "how";	The students learn "how" and less "what";
Problem solving	The students are not involved in problem solving tasks	The subject matter is better connected to the real world and includes material in different formats

Mayer & Moreno [4] claim that multimedia mainly consisting of picture and graphics contributes substantially to the internalization of the contents. They are guided themselves by a cognitive theory of multimedia learning dwelling on dual coding. From this perspective, e-Learning comes in with more advantages and disadvantages, briefly presented in the following table:

Table 2 Computer-based learning pros and cons.

Advantages of computer-based learning	Disadvantages of computer-based learning
No travel time nor costs for travel for students	Little or no hands-on work
Students can select educational material adequate for their level of understanding	Motivation levels can drop significantly if student finds it difficult to keep up
Class can be programmed anytime	A feeling of seclusion from the teacher may appear
Flexibility in program and discussions	Beginners may find handling a PC difficult and may reach information that is not relevant to the subject matter
Both teachers and students confirm that communication and interaction are better than in large conference rooms	Computer files or online learning may be inaccessible in remote area

Students can study anywhere there is access to a computer and Internet	The teacher may not always be a available due to different time zones
Develops IT&C skills that will later be used throughout life	Slow Internet connections may cause visualization problems of video or other course contents
Self-esteem and self-knowledge is boosted once the student realizes they have completed tasks	Deadlines or course activities can be difficult for students who do not have the practice of traditional teaching methods
Learning through a variety of activities	
More learning styles are welcome	
Specific items of information can be reached fast and conveniently	
Revision can be dealt with in a pleasant and constructive way	
Students can work at their own pace without additional frustrations of being left behind	

As it can be seen, computer-based learning has already gained enough ground as to be seriously considered in the educational process. In the methodology we conceived for our project, we made use of the strategies and strong points of e-learning to take instruction in academic environment to the next step.

3 MEASURING LEARNING EFFECTIVENESS - TOOLS AND RESULTS

Computer-based education is, as presented above, proved to be superior in both cost and time management while improving consistency and scalability. as Judith Strother [5] claims, "other advantages such as convenience, standardized delivery, self-paced learning, and variety of available content, have made e-learning a high priority for many corporations" as well as for the educational process in general. Using Kirkpatrick's classic model of measuring results and the effectiveness of learning, any course, be it traditional or e-learning, can be evaluated at four progressive levels (Kirkpatrick 1979). [6] Level I: Reaction gives the measure of learners' reactions to the course. Level II: Learning is a measure of what they learned. Level III: Transfer gives the measure of changes in their professional behavior when they return to the job, after the course taken. Level IV: Results is a measure of the business outcomes that occur because they are doing their jobs differently. All levels are representative for our project considering that our objective is to better integrate our subjects on the labour market.

Furthermore, Moore (1999) [7] adds that a good monitoring and evaluation system is likely to lead to a successful program, while poor monitoring and evaluation definitely leads to a failure of the project.

In a study by Allen, E., & Seaman, J. (2010) [8], that comprises about 2500 colleges from the USA, a study administered by the Babson Survey Research Group with support from Alfred. P. Sloan Foundation, it has been shown that online enrollment is skyrocketing to an average of 21% more course takers in only one year. 63% of the institutions questioned mentioned that online and project-based education is an essential part of their future strategy as learning effectiveness is higher in this way. data are confirmed by Bates, T. (2011) [9] who observes that barriers to online education include faculty resistance and lack of sufficient training of the academic stuff as well as limited institutional and instructional goals in this area. Our project shows that the integration on the labour market of the students who have taken e-learning courses is not only beneficial to them, as this boosts their self-esteem and IT&C skills but also to the project organizers and university hosting and benefiting from the project.

In his 2011 study on the future of technology in higher education, diFilippo identifies some key dots to be considered by the administrators of educational institutions such as: a vision helping the academy

to maintain its business, academic, and social currency; learning to manage access to information rather than informational assets; assigning high priority to technologies that support teaching and learning in ways that are more relevant to today's students. Indeed, the online learning environment offer both students and teachers the opportunity to exchange ideas and experiences, work around the clock from any location in the world. The most effective course design comprises questions like: what are the most important learning goals and objectives of this course? Once these goals and objectives identified, the question of which learning strategies, activities, and experiences to employ can be addressed. In our project we addressed these questions and the answers are presented in the following chapter. We were able to identify the necessities of the Romanian labour market and to spot a disagreement between the educational system and these requirements. Therefore, we considered a multiple mode of communication such as student-student, student-teacher, student-employers, student-others, employers-teacher. This is a unique initiative in the Romanian educational system thought to balance out the gaps in the professional and job market. These concepts are confirmed by the study of Kim, K.J., & Bonk C.J., (2006) [10], who observe the role of the web as an instrument for virtual teaming and collaboration, student engagement and, why not, critical thinking.

Power, M. (2008) [11] even suggests the concept of *blending online learning environment* which posits a common need for a teaching and learning environment to mirror accurately the realities on the labour filed, providing multiple opportunities and differed dialogue between students and teachers and employers as well as between faculty and the labour market. In this way the effectiveness of learning can be really assessed by the market itself, not only by the instructor. The practical side is the best contributor to virtual effectiveness measuring.

Rickard, W. (2010) [12] examines the efficacy and results of online learning and finds out some illustrative tools to measure effectiveness. We present some of them here:

- dealing with the limitation of classroom space

- eliminating any racial, sexual, financial or national possible discrimination

- placing the students in the center of the educational process

- increasing the adaptability of content and feedback management for the course

- coping with various learning styles

Following a 2011 study [13], measuring results and learning effectiveness, we developed, in order to examine the reliability and validity of the method used in Adapt2jobs project, other criteria and factors such as: whether the assignments were appropriate, real-life and effective for learning course content; whether interactive multimedia items and references allowed students to control content or whether online course content included more types of assignments to appeal to different learning styles; whether feedback was useful and clearly described, delivered and communicated; whether the sequence of online courses was logical and easy to cope with and consistent in presentation; whether tasks and activities were undoubtedly linked to the course objectives; whether the evaluation criteria were clearly stated and specified in advance; whether the online materials were well digitized and shaped in a mode pleasant and useful to follow.

4 ADAPT2JOBS - A GROWING ECOSYSTEM

Adapt2jobs project develops as a true e-learning ecosystem where all the parties involved contribute with its share. Moreover, students' opinion about the learning experience makes the difference in course content design, but also in inserting new learning facilities such as: more simulation, case studies and problem-solving applications. Test running the digitized courses means the access of 210 students to the 7 above-mentioned courses and their encouragement to explore and to manage their own learning effort. Finally, each student will be asked to evaluate his/her level of knowledge, after each course module. Students will take a final test, all the grades will be analysed and they will show us the Gaussian trend of final grades and, moreover, it will give us the opportunity to analyse the learning effectiveness. Students are asked to produce an individual project which follows a well established structure but also allows them to boost their creativity. A ranking system of evaluation will be applied to all submitted projects, five- and four-star projects will be promoted among business representatives. In this way we are confident that university business cooperation will be reinforced due to the immediate benefits offered while good projects can be transferred and implemented in companies. At the moment, courses test run already began while students become more active in the

online environment and, what is surprising, they have built strong opinion and they are eager to share with us.

On the other hand, the teaching staff involved has seen how the scientific content was shaped as digital version and they easily recognized the modules used to build desired skills. An evaluative research will be conducted in order to have insights on pedagogical aspects and students perception on the learning experience which will allow us to improve the "products" in a more practical and oriented way. The research results will be published open access to encourage new teachers to join Adapt2jobs community, at national or international level and from various backgrounds.

5   STUDENTS' OPINIONS ARE VALUABLE TO US

A set surveys will be conducted among students enrolled to Adapt2jobs, having as main goals the following: understand students perception on the importance of higher education in their future professional life, the impact of different learning styles, computer-based learning experiences, the role of self-assessment in learning progress etc. First survey was designed to capture the general opinion on the blended learning, the students' expectations and their previous experiences in computer-mediated learning, second survey was designed to gather insights on each of the seven digitized courses, more specific questions were formulated and measurement scales were carefully selected. A third survey is targeting the business representatives and, to some extent, any interested stakeholders mostly to evaluate the general perception of skills and competencies acquired through computer-mediated learning. At the moment, the first survey was launched, and some preliminary results are presented in Appendix 1, the next two surveys are ready to be launched, in early June 2015. Intermediary results will be posted on the website and the final reports are expected to be available to the general public by the end of September 2015. Nevertheless, important outcomes will be taken into consideration to improve the courses content; students' inputs are valuable for us as a project team, and also, for all the parties involved in different stages of project implementation.

6   CONCLUSIONS AND FURTHER RESEARCH

Looking back at the past 12 months of project implementation and analysing the results achieved so far, we are confident that the main objectives will be accomplished and a significant impact will be visible. Project accountability will be able to provide details about outcomes and indicators, and also on funds allocation efficiency. Furthermore, the impact assessment needs to be performed after project ends and a system to register and enhance sustainability of the project outcomes.
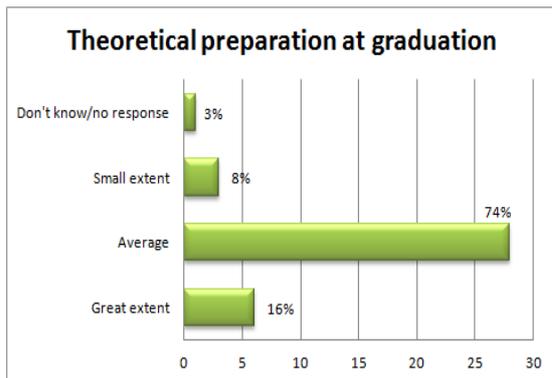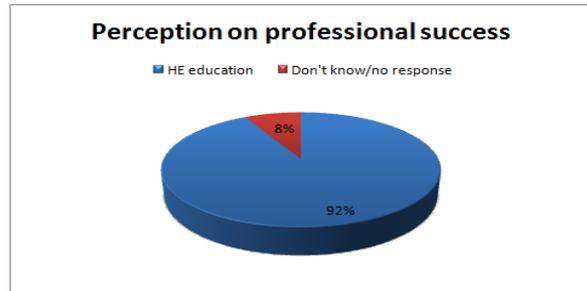
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APPENDIX 1. STUDENTS PERCEPTIONS ON GENERAL ASPECTS OF TERTIARY EDUCATION, TRADITIONAL VS. COMPUTER-BASED LEARNING
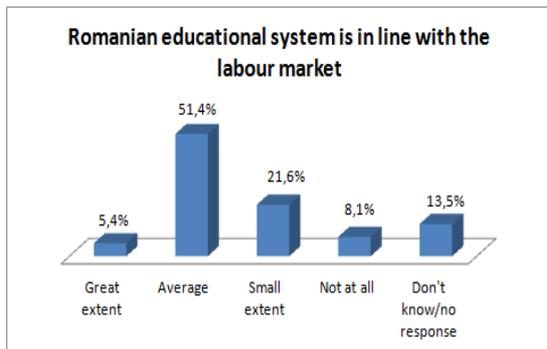
Survey results show that 92% of respondents are convinced that tertiary education plays an important role in their professional success.

Perception on professional success

- HE education
- Don't know/no response

Theoretical preparation at graduation

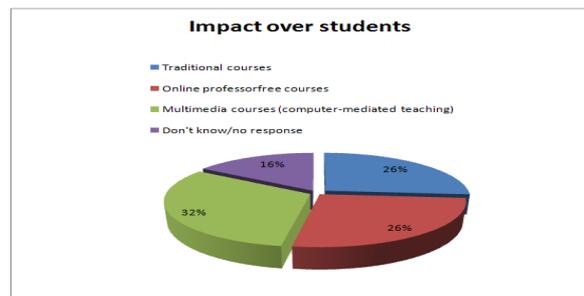|	
Don't know/no response	3%
Small extent	8%
Average	74%
Great extent	16%

Theoretical preparation at graduation is on average scale at 74% of respondents, but 39,5% of them feel that practical preparation at graduation is rather satisfactory.

Practical preparation at graduation

Don't know/no response	2,6%
Small extent	39,5%
Average	52,6%
Great extent	5,3%
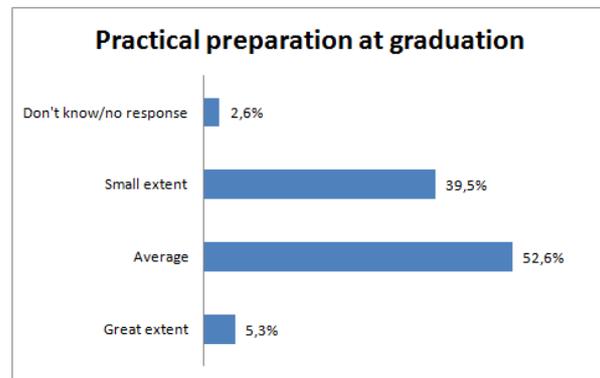
When it comes to the evaluation of the entire educational system, 51,4% of respondents consider it as being at average level.

Romanian educational system is in line with the labour market

- Great extent 5,4%
- Average 51,4%
- Small extent 21,6%
- Not at all 8,1%
- Don't know/response 13,5%

Estimated impact was appreciated being significant for online courses (2% of respondents) and (mutimedia courses 32% of respondents)

Impact over students

- Traditional courses
- Online professorfree courses
- Multimedia courses (computer-mediated teaching)
- Don't know/no response

26% / 26% / 32% / 16%

Communication in a foreign language is seen as a competitive advantage at employment.

Foreign language knowledge is an advantage at employment

- Great extent
- Average

8% / 92%