



CASE STUDY OF IMPLEMENTING WORK BASED LEARNING IN THE IT SERVICE MANAGEMENT COURSE

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Abstract

Identification of various factors that can influence students' ability to gain or improve desired competences is a key element to build a successful learning process. Consequently, new learning methods are based on the premise of enabling competencies through performance. One of the innovative learning techniques becoming more popular in traditional education process is work-based learning (WBL), commonly described as a combination of self-knowledge, the expertise in practice, and a formal knowledge in solving the real-world problems. In this paper, we present the implementation of WBL in the undergraduate course IT service management. During the course, students were encouraged to "work" in virtual business companies to simulate process of developing, promoting and delivering an innovative and creative IT service. In order to validate introduced methods, students' perception of competences and skills that were gained or improved during the course was analyzed, as well as their estimation of course delivery.

Introduction

Emerging trends in ICT sector in the last decades have a great influence on the education of ICT professionals. For a success on the challenging labour market, higher education graduates are expected to show, not only the acquisition of formal competences, but also the adaptability to the working environment. In that context, changes in curriculum design and delivery in the education of ICT professionals have raised as an important issue (Lee et al., 1995; Koppi et al., 2009; Cheryl & Marilyn, 2002; Tatnall, 2010). Most of the authors stressed the need for the creation of curriculum that will help students to develop key competencies they will need one day in the working environment. Therefore, the collaboration with employers in both curriculum design and delivery is recognized as crucial factor for the successful education of future ICT professionals. The identified need for the connection with employers in the curriculum design and delivery has lead to the innovative teaching methods such as *work-ready learning activities* (Sixsmith & Litchfield, 2010; Costley et al., 2011; Costley & Dikerdem, 2012), *experience-based learning* (Matsuo et al., 2008), *practice-based learning* (Hynes et al., 2011) *cooperative education programs* (Coll et al., 2002) etc., that are increasingly finding their place in formal education.

Work based learning

There is no unique definition of work based learning (or practice-based learning, which is the synonym), but it can be described as the combination of self-knowledge, the expertise in practice and formal knowledge in solving the real-world problems (Flanagan, 2000). Generally, it is characterized by one of the following situations:

1. accreditation of certificated or experiential learning,
2. learning agreements including employers as well as learners,
3. location of learning in the workplace or 'work' as the subject of learning, and
4. workplace or professional practice related 'applied' projects (Costly & Dikerdem, 2012).

It can be seen that work-based learning is not considered only as a work within an employers' organization, but can also be simulated in a formal academic traditional classroom-based settings through the active collaboration with employers, which is leading to the innovation and creativity in teaching process and improvement of students' employability skills. The positive effects of work-based related learning have been recognized for all of the stakeholders – students, employers, higher education institutions (HEI) and society in general, and discussed in the latest literature (Heyler, 2011; Skinner et al., 2011; Workman et al., 2011; Workman, 2011; Burrows & Wragg, 2013).

The overall objective of study presented in this paper was to obtain students' reflection on the implementation of WBL methods in the undergraduate IT service management course, and on the course content in general. The specific objective was to determine whether there is a difference in the students' reflection of different WBL methods regarding their initial interest for the course, which was characterize as small, medium and high.

Case study – course IT service management

This section presents a case study of WBL implementation in the undergraduate study course IT service management performed at the Faculty of Organization and Informatics in academic year 2013/2014. The course was organized in (1) lectures and (2) laboratory exercises, but this case study refers only to the laboratory exercises. The main goal in preparing new structure of laboratory exercises with the WBL elements was to motivate students to think and act as they were in real business surrounding. At the beginning of semester students were randomly divided into groups of four or five members. Each group was representing an IT company that is developing a new IT service. Firstly, students' companies were obligated to define their business scope and to decide about the new IT service they were introducing. When deciding about new service, students were invited to be innovative and creative. Exercises were performed in fourteen weeks, and each week students were introduced with specific topic through the presentation by lecturer and then given a task regarding the development of their new service. For solving assigned tasks, lecturers prepared various illustrations, guidelines, and recommended tools and techniques. The structure of exercises was organized in two phases. In the first phase of exercises, students' virtual companies were "working" to prepare

themselves for business meeting with a potential new client, to whom they wish to sell their new service. Two lecturers were representing a potential client that is buying a new service from students' companies. During the preparation for first meeting with potential client, a visit to companies in Technology park (TPV) was organized, in order to introduce students with the real working environment. In seventh week, business meeting was performed between students' companies and a potential client, where they were negotiating about their future relationship. Client defined his requirements upon the service (or service packet) and students' companies were entitled to accept or decline those requirements. Each company had to invite potential client to meeting (using letter of invitation) and students were asked to "play" role of a person with a specific function within company. Students were encouraged to use all communication skills and techniques they have learned during their studies (regarding saluting, presenting, clothing or negotiating). After business meeting, in the second phase of exercises, students' companies were lead to prepare services that were agreed during the meeting and to deliver final service prototype. In the fourteenth week, second business meeting was organized, where students' companies were presenting a final work on their service.

Methodology

Measurement

In this research, the intention was on the students' satisfaction with the implementation of WBL methods in the course delivery and therefore, a questionnaire divided in three parts was prepared by the authors. The first part of questionnaire is related to some general respondents' characteristics, such as gender, initial course motivation and expected grade. The second part contains a list of generic competences, adopted from the one defined in Tuning project (Lokhoff et al., 2010). The purpose of this part was to obtain students' perception about the generic competences they have acquired or improved during this course. Third part of the questionnaire contains a semantic differential table with 8 pairs of opposing attributes. Students were asked to estimate five aspect of this course delivery using semantic differential table.

Respondents

Respondents were students at Faculty of Organization and Informatics who attended undergraduate course IT service management in the academic year 2013/2014. After the course completion, students were asked to fill the questionnaire prepared in the on-line form. Totally, 104 responses were obtained, out of 140 students attending the laboratory exercises, with the response rate of 76.4%. The core sample consists of 78 male (75%) and 26 female students (25%). The personal motivation for this course was marked as high by 19 students (18%), 73 students (70%) assessed their motivation as medium and 12 students (12%) considered themselves as low motivated.

Results and discussion

The obtained results are shown below. Results were analyzed in general and according to the students' initial motivation for this course.

Results in general

Five course aspects that were assessed by students are the following:

1. the content of laboratory exercises,
2. teaching methods (team work – each team represents one virtual IT company, basic instructions for tasks, work in class with teacher guidance),
3. simulation of working environment (business meeting contracting and maintenance, assigning roles in the company, implementation of job vacancies within company),
4. collaboration with employers (visit to TPV, practical examples), and
5. career development aspect (insight into the labour market, meeting the standards of the profession – SFIA, preparation of motivation letter).

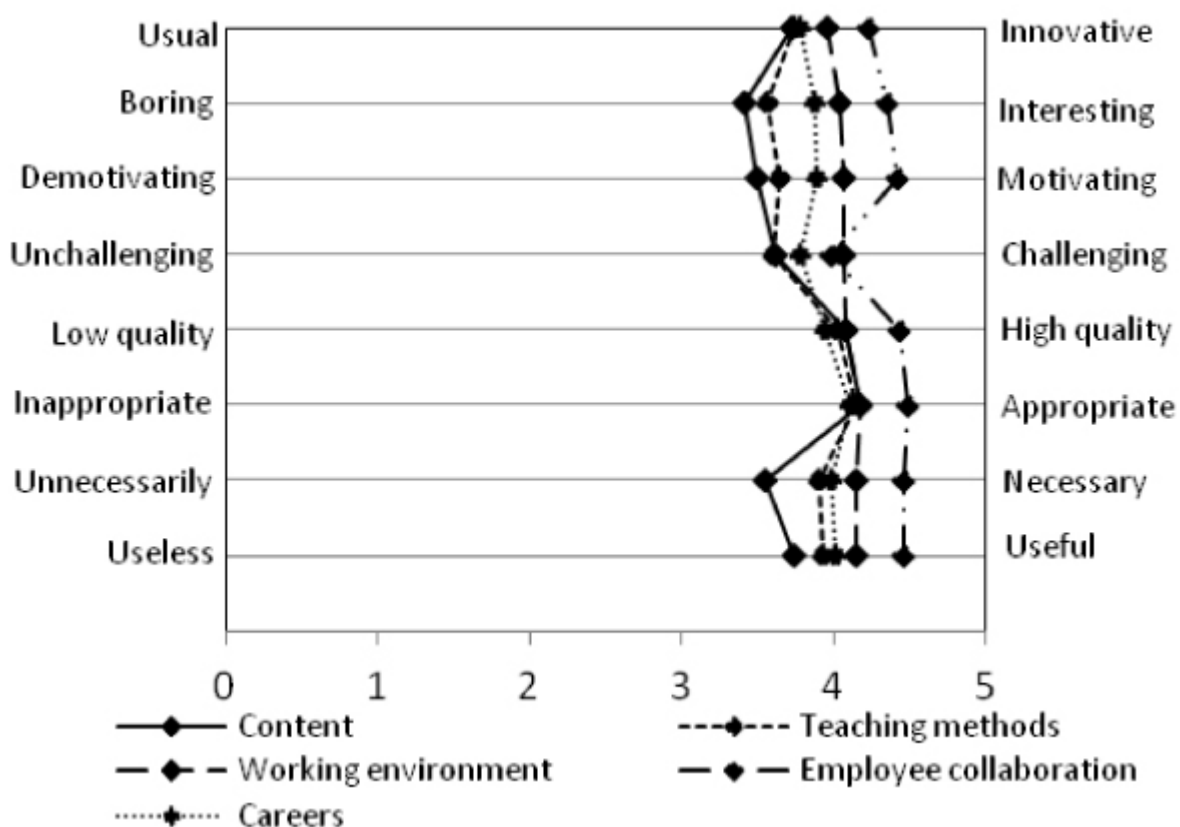


Figure 6. Students' assessment of five course aspects

Figure 1 shows students' general assessment of five mentioned course aspects. The general outcome for all respondents shows that their overall perception about the work-based learning implementation in this course is positive. It is interesting to notice that the collaboration with employers is perceived as most interesting and most useful ($M=4.308$,

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sd=0.258) aspect, although it is not perceived as much challenging. The following aspect is a simulation of working environment during the course delivery (M=4.081, sd=0.349). Preparation for the labour market through the career development activities (M=3.890, sd=0.311), teaching methods (M=3.770, sd=0.427) and the content of laboratory exercises (M=3.693, sd=0.459) were rated a bit lower, but still showing students' positive experience with those aspects.

Results regarding the initial interest for the course

Course content is an aspect that doesn't directly reflect the implementation of WBL methods, so the assessment of this one could not be directly related to the students' satisfaction with the work-based implementation in the course delivery.

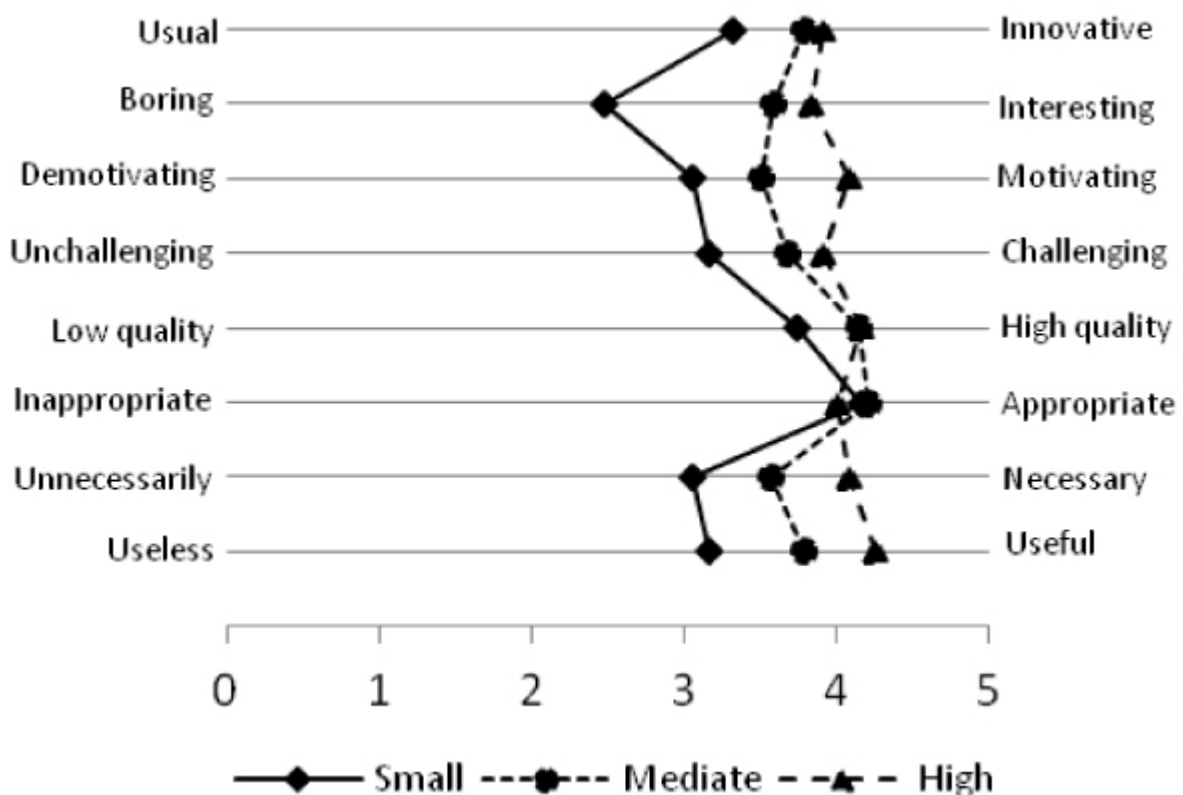


Figure 2. Assessment of laboratory exercises content according to the students' initial interest

However, it is interesting to perceive that content of laboratory exercises was highly rated, although the students' initial interest for the course was not very high. Analysis of variance was used to detect whether there is a statistically significant difference in students' perception of different aspects of course implementation regarding their initial interest for this course. The general outcome for all students shows a statistically significant difference between their assessment of laboratory exercises content regarding to the initial interest for course ($F [2.101] = 9.1807, p = 0.00022$) at the level of significance $p < 0.05$. The adjective that deviates from the regularity (Figure 2.) indicates that students who initially had lower motivation for the course content find it more boring than the other two groups of students.

Figure 3 shows students' assessment of teaching methods that were used during the course, which is as well statistically different according to their initial interest ($F [2.101] = 7.9941, p = 0.00059$) at the level of significance $p < 0.05$. Similar to the course content, students generally perceive teaching methods as appropriate and useful, but a little bit less interesting or motivating.

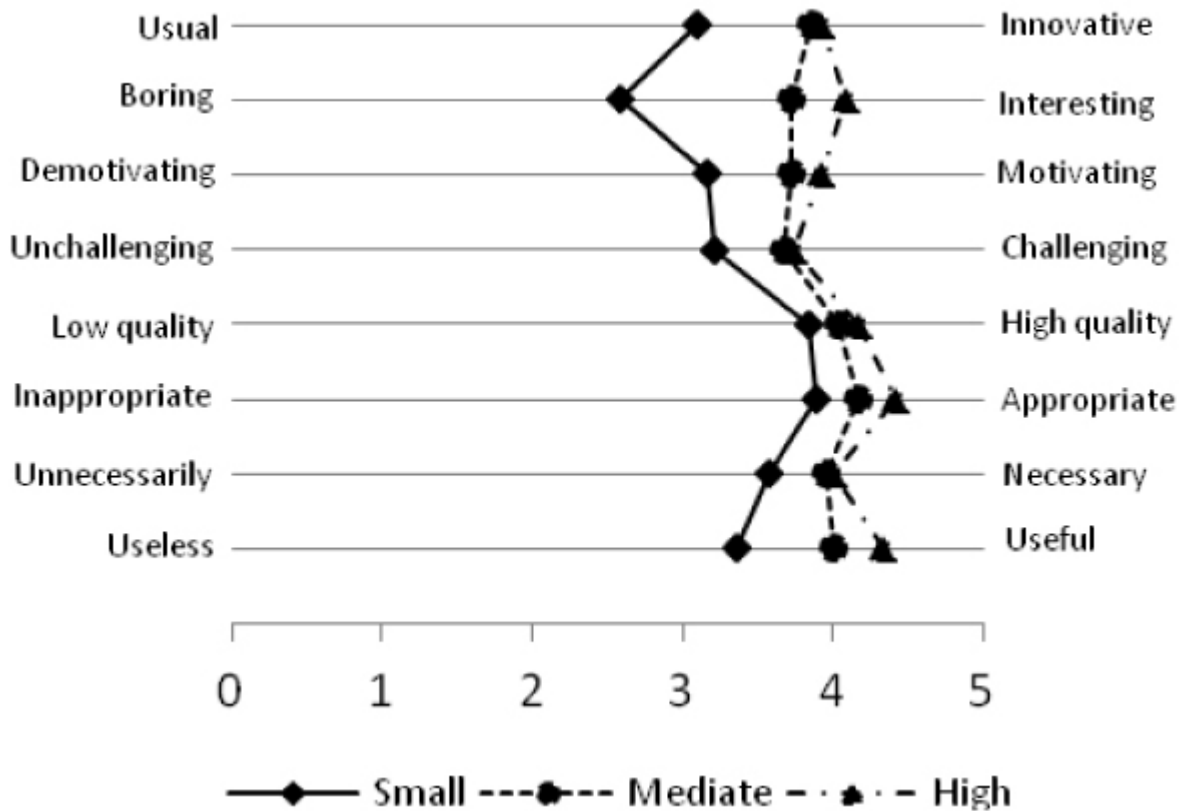


Figure 3. Assessment of teaching methods according to the students' initial interest

Simulation of working environment was realized mainly through the teamwork in randomly created teams of students. As described earlier, each team represented a small IT company with the task to create their own mission, vision, visual identity, scope of work, to assign roles in the company, to develop the prototype of their innovative IT service and to negotiate with the potential client in the form of business meeting. This kind of working environment in regular undergraduate course is perceived approximately with equal values for all the proposed attributes (Figure 4), but again with statistically significant difference according to the students' initial interest for the course ($F [2.101] = 5.336, p = 0.00627$) at the level of significance $p < 0.05$.

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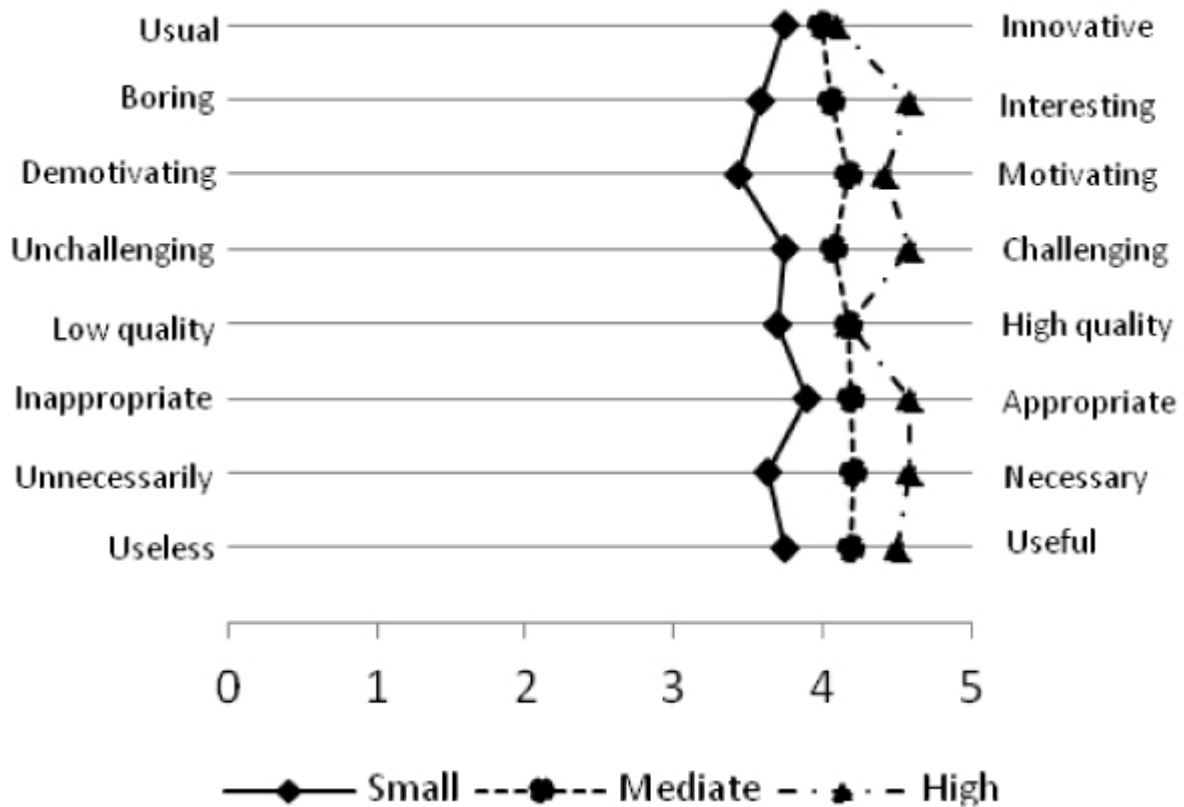


Figure 4. Assessment of working environment simulation according to the students' initial interest

Collaboration with employers was realized through the visit to TechPark Varaždin, which included the general presentation of the TPV activities and visit to one of the companies incubated in TPV. Students were introduced with the possibilities to get involved in some of the activities that TPV organizes for student population, they get the insight into the real working atmosphere in a small IT companies and had an opportunity to hear employers' expectations from graduates when entering their first job position. This component is the most evident form of work-based learning and it is interesting to notice that it has obtained the highest rates from students. Even more, there is no statistically significant difference in the perception of students with different interest for the course content ($F [2.101] = 1.726$, $p = 0.1832$) at the level of significance $p < 0.05$, which lead to the conclusion that collaboration with employers in regular courses is very welcome by students. From the Figure 5, it can be perceived that one adjective deviates from regularity, showing that this aspect was not so much challenging for students. This can be explained by the fact that students' role was rather passive in this aspect, giving them insight in the real world of work, but not demanding their active engagement.

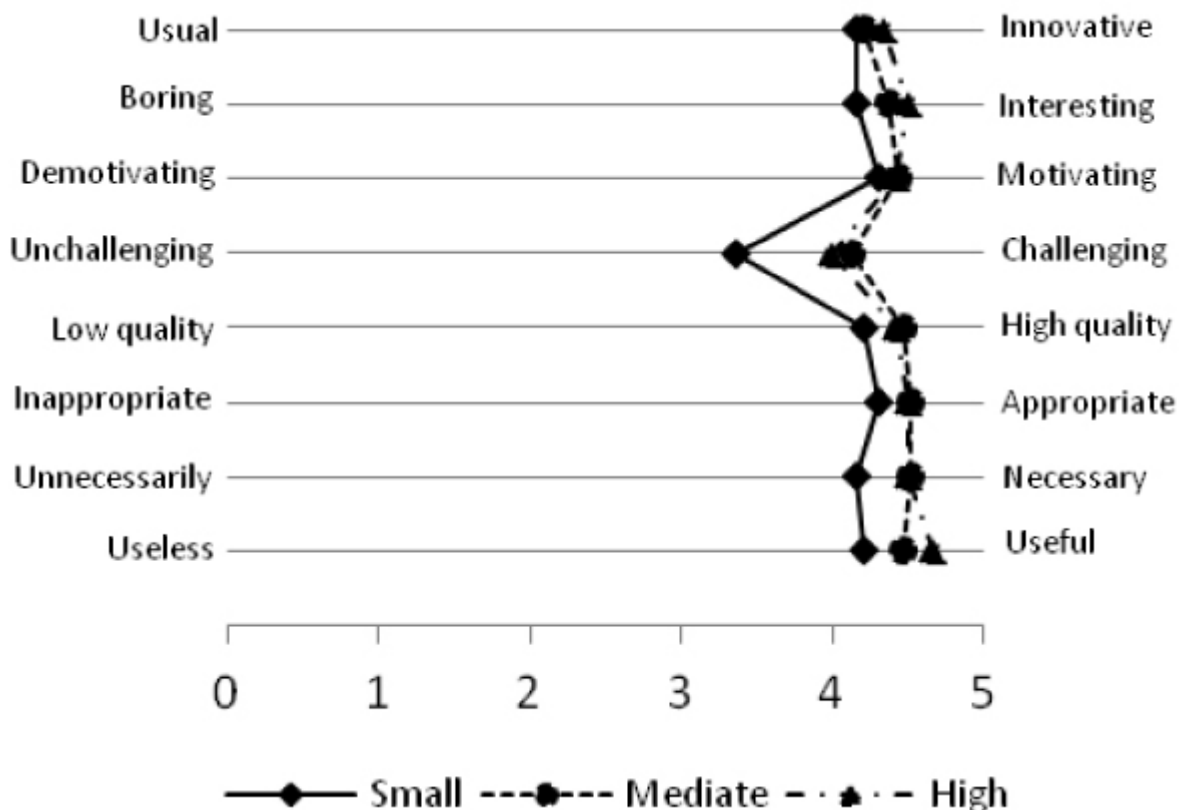


Figure 5. Assessment of collaboration with employers according to the students' initial interest

The last aspect of course that was assessed is the aspect of career development. This one was integrated in the simulation of working environment, requiring students to get the insight into the labour market, as well as the recruitment process from both employees' and employers' perspectives. On the one hand, each team had a task to prepare a job announcement according to the needs of their virtual company, which required the introduction with the real job announcements and professional standards. On the other hand, each student for itself was required to find a job announcement in accordance to its interest and to prepare the motivational letter for that job. Highly motivated students rated these activities with generally higher grades than students with middle and low motivation (Figure 6), and the difference in their perception is statistically significant ($F [2.101] = 4.988, p = 0.00859$) at the level of significance $p < 0.05$.

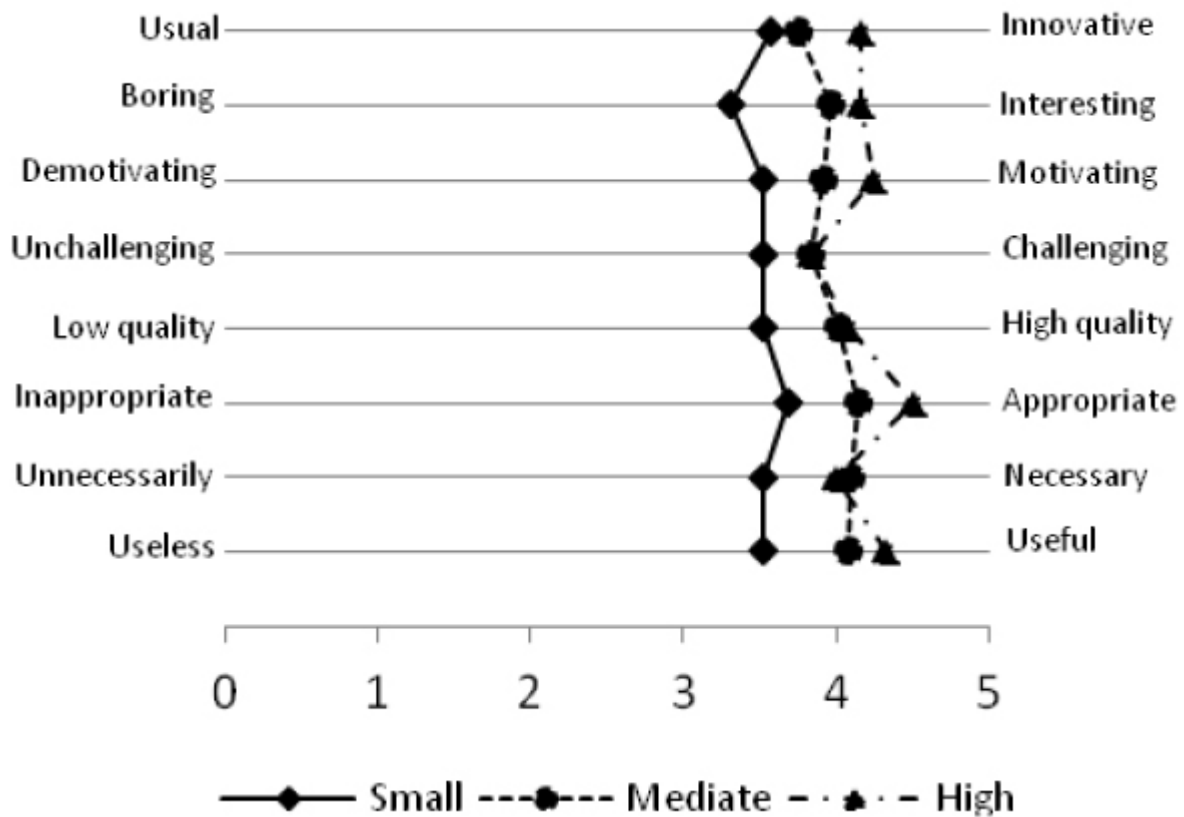


Figure 6. Assessment of career development aspect according to the students' initial interest

Conclusion

Although the educational institutions have the biggest influence on the competences acquisition of their students, future employers should be more involved in the whole educational process. Employers need to take part in students' professional development through the definition of outcomes and competencies needed from their future employees. In this way, they will help higher education institutions to align their curriculum with the needs of business. Results of presented study indicate that this synergy of traditional learning and simulation of real business surroundings within formal education is very welcomed by students.

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