INVOLVING BACHELOR AND MASTER STUDENTS IN INDUSTRY PROJECTS – THE TRIPLE WIN EDUCATION

Thomas Baaken[1], Friederike von Hagen[2], Balzhan Orazbayeva[1], Frank Riemenschneider[2]

[1]Science-to-Business Marketing Research Centre, Münster University of Applied Sciences, Johann-Krane-Weg 27, 48149 Münster, Germany

[2]Faculty of Food, Nutrition, Facilities, Münster University of Applied Sciences, Corrensstraße 25, 48149 Münster, Germany

Abstract

A new concept of running industry project within teaching and learning will be presented in the following paper. 12-15 Bachelor students of several nationalities and disciplines will investigate the potential and options for a company while 2-3 Master students will take care of Leadership, Project Management, Quality- and Time Management, etc. The theories of 16 selected key competencies following Heyse and Erpenbeck (2008) and the Cognitive domain based competencies framework of Kennedy, Hyland and Ryan (2006) are applied.

The paper is deriving competencies from theory, describing the character of a new format of projects at MUAS bringing together theoretical competencies with real world projects' experiences of students by demonstrating findings of an evaluation by surveying Master students on their experiences and perceptions.

Findings will lead into further research as well as improvements of the concept.

Key words: *skills and competencies in problem based learning, innovation, change management, higher education, companies' projects*

1. INTRODUCTION

The duty of universities to meet modern requirements and also students' expectations must be accomplished by preparing students for the economy in which they will operate (Galloway et al., 2005). Under Audretsch´s (2009) view, today's economy can be characterised as an entrepreneurial one where, entrepreneurship is the driving force underlying economic growth and performance; therefore, an institutional context which is conducive to leadership activity and intercultural competencies is necessary.

In this respect, the role of universities is perceived as going beyond preparing students to meet the demands just based on content of the labour market (Pavlin, 2014). Following Teichler (2013) and Baaken and Teczke (2014)/ Baaken et al. (2016) graduates additionally need to be trained to deal change. Hence, higher educational functions should relate to the students' abilities to 'be sceptical and critical, able to cope with indeterminate work tasks and able to contribute to innovation […]'. This is particularly relevant in an economy where organisations face problems for which a number of possible solutions exist. Apart from fundamental 'cognitive skills' (e.g. attention, reasoning, processing) individuals must apply a different set of skills to foster change and innovation. These competences relate to leadership and intercultural competencies, which should belong to the future repertoire of individual profiles of employees and managers.

Many authors discuss the concept of competence (Azemikhah, 2006; Mansfield, 2004) or even the competency era 'that replaced the contents era' (Drexel, 2003; Van der Sijde, 2012). Within higher and vocational education, the focus has changed from the content of the courses to the conveyance of competencies and skills that allow adapting easily to new demands and tasks. Barr and Tagg (1995) postulated in their highly discussed and recognized article 'From Teaching to Learning − A New Paradigm for Undergraduate Education' that colleges no longer are institutions that exist to provide instruction, but institutions that exist to produce learning (Carneiro, 2015). They argue that higher

education institutions should offer a creative environment that enables students to develop individual learning competencies and strategies to acquire and construct new knowledge by themselves.

Boentert (2013) stated that employers of graduates from higher education institutions require more than just professional expertise. While previously the level of professional expertise might have been the most decisive factor for the success of a job application, HR managers nowadays ask candidates to possess strategic competencies, such as problem-solving ability, creativity, decisiveness and interpersonal communication ability (Baaken, 2002). Literature added that there is an increasing demand for people who are able to adapt quickly to changing environments and changing organisations, as well as for 'leadership' and 'intercultural competencies' (Moodian, 2008).

2. LEADERSHIP

According to university programs the teaching staff training in adult education is aimed at obtaining professionalism within specified qualification limits. During learning and practical classes, a future andragogy acquires necessary professional, methodical and extra professional (social and personal) competencies and skills needed for the future success of his or her professional work as an adult education teacher. The continuous development and obtaining the above mentioned and additional competencies enable an actual andragogy to compete for workplaces and contribute to the recognition as a qualified specialist. Quite a wide range of competencies acquired during academic education is caused by diversity of professional roles and functions, including: research work, planning, learning, leadership, consulting, management, arrangement, analysis and evaluation (Künzel and Keller, 2001).

In an economy where the creativity and talent of individuals are the main sources of innovation, all established forms of recruiting, motivating and leading people do not work. Leaders must harness engaged communities of innovators, therefore skills for collaboration are crucial for the necessary leadership on an innovation-based economy.

Delegation and collaboration are also key elements of change and innovation. Tapscott and Williams (2010, p. 63-64) highlight the role of the leader as responsible for setting a context for co-innovation and co-creation by providing venues for discussion and collaboration. Thus, leaders must develop a set of skills that can enable employees and collaborators to communicate and co-innovate. In addition, Ernest et al. stated (2015) that […] leaders' competencies are often psychological and/or social skills, not skills specific to a business or an academic sector. Successful leaders are able to convince and inspire the required network members into reaching shared goals […] (Ernest et al., 2015).

Within the literature on business change and innovation, collaboration is also one of the major success factors. Using a Delphi model, Lin and Hsia (2011) identified thirteen core capabilities for business innovation in three main areas; within the area of 'collaboration', the three core capabilities are:

1. Developing partnerships
2. Governing the value network
3. Improving co-production and co-creating value

In this same line, cooperative business forms, including: strategic value-added partnerships, networks and cross-company project orientated cooperation, need to foster a higher degree of 'relational capacity' (Gassman and Enkel, 2004), where the leader requires highly-developed interpersonal, communication and management skills.

With the increased relevance of competencies for an innovation-based economy, the relevant goals of teaching in higher educational institutes must include helping students think and act in entrepreneurial ways (the entrepreneurial mindset), and the mastery of competencies endemic to this kind of thinking and acting (Morris et al., 2014).

3. INTERCULTURALITY AND CROSS-CULTURAL COMPETENCIES

Today international or intercultural cooperation takes place all over the world through the increasing globalization. That is why international business activities increasingly result in a creation of intercultural teams. Team members work together usually both as a project group and in other corporate contexts (Barmeyer and Davoine, 2006).

Interculturality is understood as the meeting of two or more cultures, in which, despite cultural differences, mutual interference arises. Thus, interculturality occurs through dialogue between and within cultures. In a corporate context, interculturality is seen as an integral part of human resources management within a company. Due to globalization's new changing conditions, the employees' cultural diversity has risen; therefore, an independent intercultural human resources management has to be carried out. The company's goal is here the effective application of cultural diversity in intercultural cooperation in terms of productivity and quality (Meier and Blom, 2002). According to Marquardt and Horvath (2001), building a powerful intercultural team nowadays seems to be the biggest challenge for businesses. If team members do not have experience in intercultural cooperation, the teams' effectiveness can be substantially reduced (Broszinsky-Schwabe, 2011).

The basis for normal functioning of multicultural teams, is the cross-cultural communication, which needs to be as constructive as possible, without misunderstandings and breakdowns (Spencer-Rodgers and McGovern, 2002). It is often a difficult task, since during communication people have stronger emotions, or even fear. Such emotions and preliminary assumptions, which people do already have about other cultures, directly affect their reactions on 'foreigners' and govern relations between communication partners. Since the actors of the communication process are carriers of different cultures, the interactions between them are complex and multi-staged. Therefore, there is an increased potential for misunderstandings in intercultural communication between communicators (Derboven, 2009). Efficient ways to understand disputes, disagreements and challenges in personal intercultural interaction, and to produce solutions to these issues have to be researched (Bennett, 1998; Deardorff, 2006).

Cross-cultural communication is a specific type of interpersonal interaction, which takes place under very special circumstances (Yousefi, 2006). The perception of messages can be distorted because it is based on certain cultural patterns and rules, which are different in every culture. However, not only perception depends on culture, but also the process of decoding and interpretation (Aba, 2015). Thus, the different intercultural imprints of the communication actors result in perceiving each other as strangers.

For the knowledge transfer in an intercultural context intercultural communication is actually one of the main aspects, since the process of knowledge sharing appears to be directly dependent on it. Not only knowledge is transferred through knowledge transfer but also, to a greater or a lesser extent, culture.

4. KODE CHANGES IN THE PARAMETERS OF HIGHER EDUCATION AND THE ERPENBECK'S DIAGNOSTIC SYSTEM

Since business sectors are emphasizing the importance of competencies in talent management, the education sector has agreed to align higher education programmes with the needs of the labour market (Mulder et al., 2009, Rausch et al., 2002). Teaching has evolved from a teacher-oriented lecture in which the participants are more or less passive learners, towards a more student-oriented activity in which participants are more active in the experience of learning (Kennedy et al., 2001). Norris et al. (2013) remarked that the higher education sector is in a period of change. It has been developing from a factory model, which was characterized by a teacher focus, a focus on throughputs and outputs, seat time and little flexibility, towards an outcome-focused, learner-centric, just-in-time, personalized form of unbundled learning experiences. Christensen and Eyring (2011) recommended that higher education should act as an enabler of creating and developing new managerial skills in students.

Morris et al. (2014) declared that the relevant goals of teaching in higher educational institutes must include helping students think and act in leadership ways, and the mastery of competencies endemic to this kind of thinking and acting.

Over the last decades the parameters of higher education have undergone several major changes. The globalisation of the economy, the shift from a manufacturing-based to an information-based society, as well as the development of new media and communication technologies have led to significant changes in the workplace and the conditions of work (Kennedy et al., 2001). Globalization has led to a continuous increase of the global-wide network density, and as a result of this the speed and intensity of change as well as the complexity in the system 'earth' have risen. Such developments, combined with the emergence of the knowledge society, contribute to a new paradigm of knowledge production in higher education (Moravec, 2008). Universities have to respond to these developments (Tynan et al., 2008).

In the past, it was mainly the professional expertise that decided on the success of a job application, but today's personnel managers attach great importance to the strategic competences of the candidates such as problem solving, creativity, presentation techniques, decisiveness and interpersonal communication ability (Baaken, 2002). Besides, there is a growing need for 'multi-skilled workers' who are able to adapt quickly to changing skills demands and new methods of work organisation (Mansfield, 2004). Given the importance attributed to competencies in business, there is a mutual agreement to align university curricula to the needs of society. (Mulder et al., 2009; Van der Sijde, 2012) Small businesses require skills and entrepreneurial competencies that are very much different than those from larger organizations (Tehseen and Ramayah, 2015).

A concept looking at the issue from a different angle is the competence framework KODE of Erpenbeck and Heyse, which relates to the German understanding of competence. KODE is a system for the diagnosis and development of competencies. Its theoretical foundation is a model of self-organisation derived from synergetic, management studies from Drucker, Malik and Probst, and Fromm's strengths-weaknesses paradox (Heyse, 2010).

Based on their empirical research, the four basic competence groups have been further subdivided into 64 strategic competencies; thereby building a comprehensive competence map is used for coding purposes.

Competencies here are defined as abilities for self-organization of acting and thinking – in particular in changing situations and as ability to conform in a comprehensive sense. Erpenbeck and Heyse structure the competencies into four basic areas: (P) Personal Competence, (A) Activity and Action Competence, (M) Methods and Professional Competence and (S) Socio-Communicative Competence (Heyse and Erpenbeck, 2008).

In higher education, competence profiles are generically composed for different levels of mastery (e.g. BSc, MSc level); in the higher education framework certain key competencies have been emphasized (Heyse, 2014; NA, 2005).

However, all frameworks and studies have in common that they provide information on required competencies across all industries and functional areas.

5. FRAMEWORK CONSOLIDATION

The importance of the competence groups P, A, M and S has been determined based on the frequency and emphasis with which strategic competencies were mentioned. Similar to the method of the questionnaire from Erpenbeck and Heyse, and based on the assessed importance, for each article a rank order has been assigned to the four strategic competence groups, with the most prominently mentioned competence group receiving a score of 2x, the less important group receiving a score of 1x and low importance.

The results show that the strategic competencies that belong to competence groups P and A were mentioned particularly often in the articles. Such desirable strategic competencies are, for example, creativity, openness to change, willingness to innovate, drive, decision-making ability, self-motivation

and personal responsibility. The strong emphasis on the personal competence group are attributed to the often mentioned desirable strong leadership skills and the need for charismatic leaders (1,3,4,5,6,7,9,10,11,12,15,16) some also to cultural competencies (8,13).

Selected key competencies	**P**	**A**	**F**	**S**
1. Results-orientated action		x	x	
2. Loyalty	xx			
3. Analytical skills	x		x	
4. Problem-solving skills		x		x
5. Reliability	x		x	
6. Decision-making ability	x	x		
7. Creative drive	x	x		
8. Intercultural Communication	xx	xx		xx
9. Initiative		xx		
10. Commitment	x	x		
11. Holistic thinking	x		x	
12. Conflict solving abilities	x			x
13. Capacity for teamwork	x			x
14. Acquisition strength		x		x
15. Resilience	x	x		
16. Innovativeness	x	x		
Sum of these key competencies	14	12	4	6
Weight in % of 36 mentions (total 100%)	38,9%	33,3%	11,1 %	16,7 %

Table 1: Rank order of competence groups as mentioned in reviewed journal papers
Source: Adapted from Erpenbeck and Ortmann (2014), p. 20.

Kennedy et al. (2006) reflected on a different system and list of domain based competencies. They came up with a hierarchy of cognitive domains. The following listing is naming the cognitive domains and – in brackets – the learning outcomes and competencies which are achieved: Knowledge (Ability to remember facts without necessarily understanding, Collect, define, describe, find, identify, list, memorize, name, order, outline, recall, recognize, repeat, show, state); Comprehension (Ability to understand and interpret learned information, Clarify, contrast, convert, decode, defend, describe, differentiate, discuss, distinguish, explain, illustrate, predict); Application (Ability to use learned material in new situations, Apply, assess, calculate, complete, compute, demonstrate, develop, examine, interpret, produce, select, show, transfer); Analysis (Ability to break down information into its components, Analyze, appraise, break down, categorize, compare, connect, criticize, differentiate, divide, examine, investigate, examine); Synthesis (Ability to put parts together, Arrange, assemble, combine, compile, compose, construct, create, design, develop, generate, invent, make, plan, prepare); Evaluation (Ability to judge value of material for given purpose, Appraise, argue, conclude, convince, criticize, decide, evaluate, grade, interpret, judge, rate, recommend).

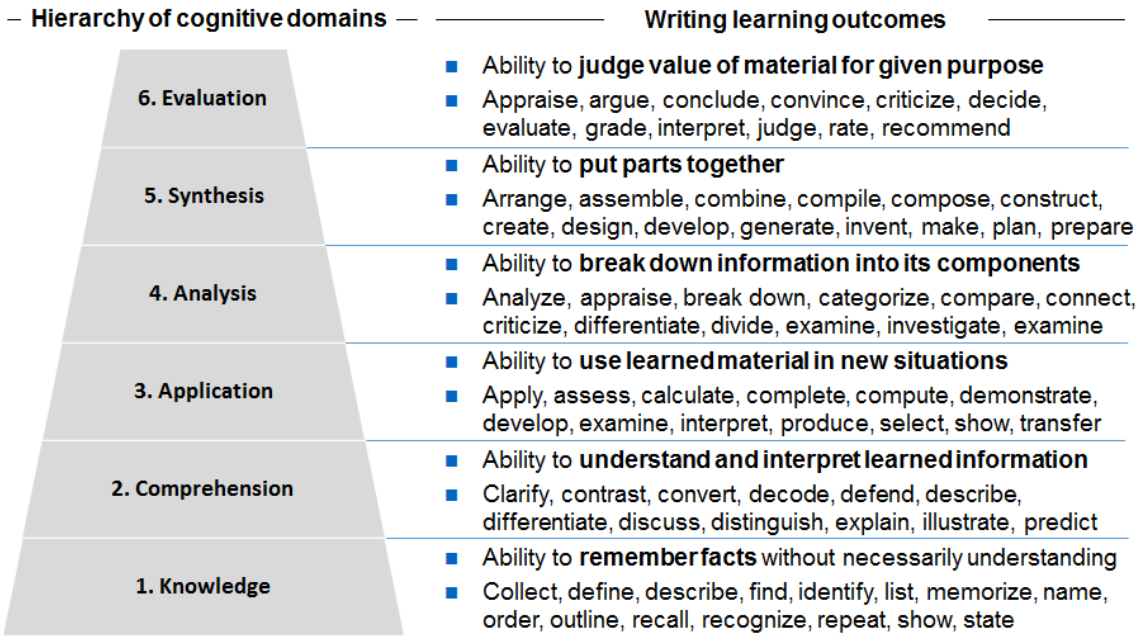


Figure 1: Cognitive domain based competencies
Source: Adapted and consolidated from Kennedy et al. (2006), p. 27-36

6. DEMONSTRATING THE PROJECT FORMAT BY INVOLVING STUDENTS

The general setup of this kind of projects can be summarised as follows. At the semester start mostly international Bachelor students as well as Master students are allocated to the projects. Depending on the amount of the expected workload and the interests of students, around 12 to 15 students are joining each project. In week 2 delegates of each partner company are handing out the briefing and task. This can be seen as a kick-off workshop. All kinds of questions are welcome. Week 3 is used for an internal discussion and development of a first project design to address the requirements and questions of the company. A re-briefing takes place (physically or via Skype) to make sure all stakeholders (students, lecturers and company representatives) have the same understanding of the problem and get approval for the methodology which is part of the project design. (Baaken and Gosejohann, 2009)

In the following weeks the project is executed: questionnaires are developed, basic groups defined and organised, samples drawn, fieldwork done, data analysis conducted, recommendations developed and a report created. This period lasts approximately 10 weeks. Small groups of students work on parts of the project (work packages). Every working group of Bachelor students is managed by a Master student who is responsible for the management of the group support and theoretical questions. Every week all working groups meet in a plenary session to present in between results of their sub-groups. From every plenary session minutes are written and the minutes (using a template provided by the lecturer) are sent to the partner company on the following day. Thus the project partner is constantly involved in the process, always informed what happens in the project and has the opportunity to interfere by providing additional background information, contributing to a discussion or adjusting a decision. After having finished the final report, the entire group including Bachelor and Master students and lecturers travel to the company's premises and present the results to delegates of the company. Being onsite, a number of participants from the company are able to join in and the students are put into a professional environment outside of the university, e.g. the board room of the company. Every student is delivering a part of the presentation and questions are answered by the group members, not only by the actual presenter. At the end students receive a qualified certificate, which is describing the project in its key elements and assessing the groups' performance level. Master students get a different certificate in which on top of the mentioned contents their managerial skills are specified in detail. The certificate is printed on the company's letterhead and signed by responsible managers of the company so that the certificate helps

graduates in their application process for a job. The company provides a budget for the project. The income is part of the university's third party money stream and is partly spent on project research issues (database, field work etc.), and partly used for buying general equipment for the university (computers, publications, etc.).

The project activities range from addressing potential clients, communicating with the client including transparent communication of the project's progress, developing and implementing an appropriate research strategy, and presenting the results to the client. For structuring the projects and developing appropriate solution concepts, methods and professional competence is required. For the daily execution of work within the projects 'social-communicative competence' and 'activity and action oriented competence' are required and 'personal competence' is particularly demanded in the Master students' leading roles. Overall, the project set-up of the teaching modules supports well the development of the previously identified competencies. (Hasanefendic et al., 2015)

7. EMPIRICAL RESEARCH

7.1. Field work

To quantify the so far conducted projects it has to be stated that four projects per semester haven been realized and 3 Master students haven been involved since summer semester 2014 in each project.

4 semesters x 4 projects x 3 Master students = 48 students (basic groups)

Emails containing a semi structured questionnaire haven been sent to all students belonging to the basic group. 31 have responded and commented on the criteria and confirmed the most relevant variables, their conceptualizations and interrelationships. In 31 responses the issue of leadership was addressed 24 times and the issue of dealing with Intercultural Teams and building International Competencies 27 times.

Furthermore 15 in-depth interviews via telephone followed this step. The following section elaborates on these interviews.

An in-depth interview can be defined as a 'personal interview, which uses extensive probing to get a single partner respondent to talk freely and to express detailed believes and feelings on a topic' (Kinnear et al., 1993, p. 240). In-depth interviews have been found to be valuable when the research aim is to generate a comprehensive list of ideas about a complex concept (Fern, 1982), and when the expected information is likely to vary considerably (Ticehurst and Veal, 1999). In addition, in-depth interviews are useful in developing hypotheses (Kinnear et al., 1993) and thus have often been used to investigate a topic prior to a large or quantitative study (Ticehurst and Veal, 1999).

7.2. Results of empirical research via in-depth interviews

Reading some representing quotes of the survey, leadership as well as intercultural competencies have been addressed extensively. Some examples:

Addressing Leadership:

> *'It was exciting to experience the difficulty that poses to convince everyone about an idea and to motivate them. Even though we know that such a project implies loads of preparatory work and further enhancements, it is indeed a valuable experience.*
>
> *The only negative aspect regarding the project is that it is more time consuming than other courses.' #2*

'Another finding is that a project can only be completed on time by targeted teamwork from every team member. I got away from that 'I will do everything myself' mentality.

As shown in the project, a confident behaviour and a cooperative leadership style are key to safeguard the authority towards the cohort of students.

As the leader of such a project, it is difficult to know every single thing within the teams and therefore, people within the teams that keep the leaders updated are needed. Additionally, now I understand that besides project planning, factors such as project documentation and performance monitoring play an important role.' #11

'I have developed a sense of what it really means to give tasks to team members and to trust the team's performance. I was able to learn how important it is to let team members work independently and to involve them as much as possible in the problem solving. This also increases the motivation of the team members as they develop their own solutions and don't get everything done by the Master students. They feel that the project really belongs to them.' #8

Addressing Intercultural Competencies

'We learned more than just how to work in teams and in a structured way. It was exciting to see how differently students work in each country. Regardless of the number of intercultural courses that we had before, it is completely different to experience it first handed. Sometimes, it was frustrating too, especially when the task wasn't totally clear. But we learn from that and found solutions.' #1

'The fact that we led an international team made the experience even more valuable for me. The project posed me challenges in the meantime. However, these challenges helped me learn a lot regarding the management of international teams.' #3

'Firstly, I would like to thank you for your trust and the opportunity to be in charge of such an exciting and challenging project.

All in all, the marketing project was for me the best course in this Master semester. To lead a group of 18 international students in their mid 20s, and to motivate and help them develop themselves every day, made this project something especial and personal to me. A priceless experience. Moreover, I was also able to develop myself in the past 4 months through the new, and partly, unexpected challenges that such a project carries within: all of this in a practical environment. I found the tasks ideal for the Master students.' #5

'The marketing project was a great opportunity for me to learn what leadership really means in real life. My expectations were fulfilled.

The first thing I learned was to step up in front of a cohort of international students: to motivate them and to delegate assignments I faced several different strategies to approach and solve problems. The variety of Nationalities was a challenge first, but afterward it turned out to be the best way of solving problems on a high level of creativity and quality.' #13

8. EDUCATIONAL IMPLICATIONS

The following chapter demonstrates how Higher Education Institutions may act to follow those findings and improve their teaching and learning efficiency as well as achieving a far higher level of knowledge in entrepreneurship in the student base following the reflections on the experiences by using the findings of the paper.

The projects have in common identifying and formulating a specific investigation problem based on a task by the industry partner. Secondly, the students have to decide on the appropriate information sources and data collection/analysis methods, and thirdly they have to develop a specific research proposal to meet not only the client's needs and cost constraints but also the time constraints of the class schedule. Kennedy argues that live business cases are powerful learning tools because they provide an 'open-ended environment that fosters the development of critical thinking and problem-solving skills' (Kennedy et al., 2001, p.147). Besides, most of the collaborative industry projects conducted by student teams give students the opportunity to develop their team ability and their interpersonal skills. This is an important outcome given the changed requirements of employers towards the graduates of higher education mentioned before (Kennedy et al., 2001). In summary team projects generally offer many pedagogical benefits such as higher motivation of the students, multicultural experiences, positive peer modelling, cooperative learning, as well as the development of essential workplace skills including communication, group interaction and technical skills (Williams et al., 1991) and in our case also managerial skills.

There are also problems associated to projects realised by student teams. One is the dilemma that team members might contribute unequally to accomplish the workload (Williams et al., 1991). There are several reasons why one or more students might not contribute fully to the project, from the simple will to avoid effort and responsibility to more complex reasons such as lack of self-confidence and/or the bowing to very dominant personalities within the group (Williams et al., 1991). Either way, the consequences of inequitable contributions in group projects are negative as some students may learn less than with individual assignments. Others might feel overstretched and might also reduce their effort because they fear that the grading system will not reward their contribution in a commensurate way. 'In the worst instances, the group is unable to complete its task, and the instructor must deal with distraught students, anxious about how to proceed, fearful of grading consequences, angry about their teammates' failure to perform assigned tasks' (Williams et al., 1991, p. 49). They suggest different solutions to cope with the so-called 'free-rider-effect' within student groups. The most important key principle is the use of an appropriate award structure that also allows an individual accountability for each student. For example, the instructor might sum up the individual scores of the students to get a group score which then builds the basis for the team grade. Other methods could be the use of peer evaluation forms, instructor observations, working papers, meeting reports, interaction logs or confidential reports to ensure the individual accountability (Williams et al., 1991).

The objective of practice-oriented research projects in cooperation with industry is to offer the students real-life experiences and to make the theoretical know-how of the university lectures more tangible by using it in actual business case settings. Besides, the students are encouraged to actively organise and structure their learning process and to train − next to the study of marketing knowledge − also soft skills such as complex thinking, problem solving capacity, presentation techniques, interpersonal communication competence and team ability. Since to a large extend the students self-organize their projects by means of 'learning by applying' and 'learning by explaining it to their mates and later to the companies' delegates' a high level of understanding and cognitive based competencies are created. (Hasanefendic et al., 2015)

Furthermore, Master students represented project leader, group leader and task leader roles and are asked to teach applied methods and achieved results to the team. Opposed to traditional student assessment techniques, the grades on project work case studies or seminar papers. This system should be applied, because self-determination of the students is regarded as a key factor. (Corten and de Jong, 2015)

	Student projects for Industry partners (Bachelors)		Student projects for Industry partners (Masters)	
	Leadership	Intercultural Competencies	Leadership	Intercultural Competencies
Evaluation	●	●	●●●	●●●
Synthesis	●	●	●●●	●●●
Analysis	●	●	●●	●●
Application	●●	●●	●●●	●●●
Comprehension	●●	●●	●●	●●
Knowledge	●●	●●	●●	●●

●●● = competence creation strong; ●● = competence creation, ● = competence creation low

Table 2: Competence Creation by learning form
Source: own creation

Thus Master as well as Bachelor students developed and trained a whole set of different competencies that are required in today's workplaces according to entrepreneurial thinking and acting. The students had to deal with the individualities of their team mates and therefore had the opportunity to train their communication skills, relationship and team ability. By developing a concept for the project, self-managing it and developing knowledge about complex markets in a short time-frame the students fostered their 'methods and professional competence' as well as their 'personal competence'. In addition, analytical skills were intensively trained as the students were confronted with a research question of the industry partner and had to find suitable research methods and strategies to create answers to this question. The time pressure as well as the pressure of delivering a concise presentation of the results to the partner's attributed to a temporal emotional debilitation of the students, a necessity in order to train such competencies. (Hasanefendic et al., 2015)

On top the time pressure also created a frame for the development of project management and quality management skills. The lecturers provided coaching assistance and regular feedback to permit self-reflection. As most projects are conducted on an international level, the students also acquired know-how on global markets and international business relations. Generally, it can be concluded that student projects that are realised in cooperation with industry represent an effective 'learning by teaching' scheme that offers students a creative learning environment and the opportunity to develop individual learning strategies as well as comprehensive competences of different kind.

9. CONCLUSION

The discussion on change and innovation is ongoing. The competencies of leadership and intercultural competencies have been identified as being of great importance for successful management in the field. It also requires a re-orientation of talent management in order to lead organisations and equip them well to face future challenges. This effort is the starting point to a better understanding of the individual strategic competence required to successfully manage in change and innovation. The paper offers initial insights that higher education programmes need to re-adjust in order to provide graduates with a desirable strategic competence profile.

New pedagogical theories have found their way into university didactic, e.g. the concept of 'learning by teaching' which is based on the idea that Master students are much more motivated to learn when they are given the opportunity to act as teachers themselves and to teach their fellow Bachelor students the learning-matters of the course (Skinner, 1994; Grzega, 2003; Grzega and Schöner, 2008; Cortese, 2005; Eddy, 2006; Davey, 2015; Hasanefendic et al., 2015). 'Learning by Teaching' also offers students the opportunity to practice and develop competences because it 'encourages and demands creativity, independence, self-confidence and fundamental key qualifications (i.e. the ability to work in an international team, complex thinking, the competence to seek and find information, explorative

behaviour, presentation skills, project competence, internet competence, generating knowledge as well as disciplinary virtues like punctuality, reliability, patience)' (Grzega 2005, p. 2). Innovative teaching methods that allow Bachelor and Master students to be more active within their learning process are also much more effective regarding the percentage of knowledge that is actually memorised (Baaken, 2002). Explaining the learning-matters to others was proven to be the most effective procedure of the innovative teaching method – corresponding to the above described 'Learning by Teaching'.

Another factor that exerts a strong influence on the academic education is the increasing competition between the different institutions of higher education. In order to attract the most talented students, universities are challenged to offer ambitious, diversified and innovative teaching methods (Lim and Svensson, 2007).

Adopting a more proactive attitude in addressing the needs of its main stakeholders, such as employers, the business community and the students when designing courses is considered in this article an innovative way of carrying the mission of teaching from the university by integrating real world industry projects into the teaching and learning setting (Baaken et al., 2009). Yet Audretsch (2009) and Galloway et al., (2005) state that addressing the needs and concerns of the wider civilisation and the stakeholders of the knowledge society is perhaps what makes the university one of the most resilient institutions in society. Thus the paper shows a proven method for a Triple Win situation: Lecturers, companies and students all benefiting significantly from this approach.

REFERENCES

Aba, D. (2015). Towards an intercultural communication competence tool for academic mobility purposes. *Journal of International Communication*, [online] 39. Available at: http://www.immi.se/intercultural/nr39/aba.html [Accessed 05.07.2016].

Audretsch, D. B. (2009). The entrepreneurial society. *The Journal of Technology Transfer*, 34(3), pp. 245-254.

Azemikhah, H., (2006). The 21st Century, the Competency Era and Competency Theory. In *AVETRA Conference Papers.* Australia: University of Wollongong, pp. 19-21.

Baaken, T. (2002). Soft Skills und Schlüsselqualifikationen als integraler Ausbildungsbestandteil an Hochschulen. *Organisation und Management*. *Berichte aus der Hochschule*, 25, pp. 4-18.

Baaken, T., Kiel, B., Rossano, S., Baaken, M. and Maas, G. (2016). Competencies in Entrepreneurship – Teaching Entrepreneurship in Higher Education from a new angle. In Saíz, Manuel Josè, ed., *Handbook of Research on Social Entrepreneurship and Solidarity Economics* (pp. 154-173). New York: IGI Global

Baaken, T., Kiel, B. and Kliewe, T. (2015). Real World Projects with Companies Supporting Competence Development in Higher Education. *International Journal of Higher Education*, 4(3), pp. 129-139.

Baaken, T. and Gosejohann, S. (2009). Higher Education in International Marketing by Integration of Industry Projects. *EDULEARN09 Proceedings, International Conference on Education and New Learning Technologies*, pp. 5185-5195.

Barmeyer, I. and Davoine, E. (2006). Interkulturelle Zusammenarbeit und Führung in internationalen Teams: Das Beispiel Deutschland – Frankreich. *Zeitschrift Führung + Organisation*, 75(1), pp. 35-39.

Barr, R. B. and Tagg, J. (1995). From Teaching to Learning − A new paradigm for undergraduate education. *Change*, 27(6), pp. 13-25.

Bennett, M. J. (1998). *Intercultural Communication: A Current Perspective. Basic Concepts of Intercultural Communication: Selected readings*. Yarmout, ME: Intercultural Press.

Brockmann, M., Clarke, L. and Winch, C. (2009). Competence and competency in the EQF and in European VET systems. *Journal of European Industrial Training*, 33(8/9), pp. 787-799.

Boentert, A. (2013). Qualitätskultur durch Kommunikation. Das Beispiel der Fachhochschule Münster. *Zeitschrift für Hochschulentwicklung ZFHE*, 8(2), pp. 125-137.

Broszinsky-Schwabe, E. (2011). *Interkulturelle Kommunikation: Missverständnisse und Verständigung*. Heidelberg: Springer-Verlag.

Carneiro, R. (2015). Learning: The Treasure within - Prospects for Education in the 21st Century. *European Journal of Education*, 50(1), pp. 101-112.

Christensen, C. M. and Eyring, H. J. (2011). *The Innovative University. Changing the DNA of Higher Education from the Inside Out.* San Francisco: Jossey-Bass.

Corten, H. and de Jong, F. (2015). *Measuring Competence Levels of Students in Higher Education: towards a Self-Assessment Instrument*. DOI 10.13140/RG.2.1.3619.1449.

Cortese, C. G. (2005). Learning through Teaching. *Management Learning*, 36(1), pp. 87-115.

Davey, T. (2015). *Entrepreneurship at Universities - Exploring the factors influencing the development of entrepreneurship at universities*. Amsterdam: UIIN University-Industry Innovation Network Publishing.

Deardorff, D. K. (2006). Identification and assessment of intercultural competence as a student outcome of internationalization. *Journal of Studies in International Education*, 10(3), pp. 241-266.

Derboven, K. (2009). *Interkulturelles Training. Trainingsmanual zur Förderung interkultureller Kompetenzen in der Arbeit.* Heidelberg: Springer-Verlag.

Drexel, I. (2003). *Two Lectures. The Concept of Competence – an Instrument of Social and Political Change. Centrally Coordinated Decentralization – No Problem? Lessons from the Italian Case*. Stein Rokkan Centre for Social Studies, Working Paper 26.

Eddy, J. (2006). Learning through teaching model results in improved student learning. *Teaching Matters*, 10(2), pp. 1-31.

Ernest, K., Matthew, S. K. and Samuel, A. K. (2015). Towards Entrepreneurial Learning Competencies. The Perspective of Built Environment Students. *Higher Education Studies*, 5(1), pp. 20-30.

European Qualifications Framework (EQF) (2014). [online] http.//ec.europa.eu/eqf/terms_en. [Accessed on 29.11.2015].

Erpenbeck, J. and Ortmann, S. (2014). Die Berliner Millionenbrücke und die KODE®–KODE® X–Brücke. In: Schäffner, L., ed., *Kompetentes Kompetenzmanagement: Festschrift für Volker Heyse*, Münster/New York: Waxmann, pp. 11-25.

Gassmann, O. and Enkel, E. (2004). Towards a theory of open innovation: three core process archetypes. *R&D management conference*, 6(6), pp. 1-18.

Galloway, L., Anderson, M., Brown, W. and Wilson, L. (2005). Enterprise skills for the economy. *Education+ Training*, 47(1), pp. 7-17.

Grzega, J. (2003). *LdL in universitären Kursen. Ein hochschuldidaktischer Weg zur Vorbereitung auf die Wissensgesellschaft*, [online] http://www.ldl.de/material/berichte/uni/ldl.Pdf [Accessed on 11.7.2016].

Grzega, J. (2005). Learning By Teaching. The Didactic Model LdL in University Classes. [online] http://www.ldl.de/material/berichte/uni/uni. htm, [Accessed on 11.12.2015].

Grzega, J. and Schöner, M. (2008). The didactic model (Lernen durch Lehren) as a way of preparing students for communication in a knowledge society. *Journal of Education for Teaching*, 34(3), pp. 167-175.

Hasanefendic, S., Heitor, M. and Horta, H. (2015). Training students for new jobs: The role of technical and vocational higher education and implications for science policy in Portugal. *Technological*

Forecasting and Social Change, [online] http://dx.doi.org/10.1016/j.techfore.2015.12.005 [Accessed on 20.06.2016].

Heyse, V. (2010). *Grundstrukturen menschlicher Kompetenzen. Praxiserprobte Konzepte und Instrumente*. Münster/New York: Waxmann.

Heyse, V. and Erpenbeck, J. (2008). *Kompetenztraining. Informations- und Trainingsprogramme*. 2. überarb. u. erg. Aufl., Stuttgart: Schäffer-Poeschel.

Heyse, V. (2014). *Aufbruch in die Zukunft, Erfolgreiche Entwicklung von Schlüsselkompetenzen in Schulen und Hochschulen*. Münster. New York: Waxmann.

Kennedy, D., Hyland, A. and Ryan, N. (2006). Writing and using Learning Outcomes. In: E. Froment, J. Kohler, L. Purser and L. Wilson, eds., *EUA Bologna Handbook – Making Bologna Work* (pp.1-30) RAABE Fachverlag für Wissenschaftsinformation.

Kennedy, E. J., Lawton, L., and Walker, E. (2001). The case for using live cases. Shifting the paradigm in marketing education. *Journal of Marketing Education*, 23(2), pp. 145-151.

Kiel, B. (2014). Companies' Demand for Competencies to Overcome Disruptive Changes. In: T. Baaken and J. Teczke, eds., *Managing Disruption and Destabilisation*, pp. 91-108, Cracow.

Kinnear, T.C., Taylor, J.R., Johnson, L. and Armstrong, R. (1993). *Australian Marketing Research*. Roseville: McGraw-Hill.

Künzel, K. and Keller, V. (2011). Wegbegleiter in die Erwachsenenbildung. Ein Studientext von Studierenden für Studierende und Sympathisanten, [online] http://.hf.uni-koeln.de/file/7273 [Accessed on 06.07.2015].

Le Deist, F. (2009). Compétence. Conceptual approach and practice in France. *Journal of European Industrial Training*, 33(8/9), pp. 718-735.

Lin, L. M. and Hsia, T. L. (2011). Core capabilities for practitioners in achieving e-business innovation. *Computers in Human Behavior*, 27(5), pp. 1884-1891.

Lim, M. and Svensson, P. (2007). The Embedded Critic: Marketing in the Future of the University. In *5th Critical Management Studies Conference*, Manchester Business School, Manchester, UK.

Mansfield, B. (2004). Competence in transition. Journal of European Industrial Training 28(2/3/4), pp. 296-309.

Marquardt, M. J. and Horvath, L. (2001). *Global teams: How top multinationals span boundaries and cultures with high-speed teamwork.* Nicholas Brealey Publishing.

McCann, J., Selsky, J. and Lee, J. (2009). Building agility, resiliency and performance in turbulent environments. *People & Strategy*, 32(3), pp. 44-52.

Meier, H. and Blom, H. (2002). Internationales Management: interkulturelle Kommunikation, internationales Personalmanagement. *Diversity-Ansätze im Unternehmen*, Berlin.

Moodian, M. A. (2008). *Contemporary Leadership and Intercultural Competence: Exploring the Cross-Cultural Dynamics within Organizations*. Sage Publications.

Moravec, J. W. (2008). A new paradigm of knowledge production in higher education. *On the Horizon*, 16(3), pp. 123-136.

Morris, M., Kaplan, H. and Jeffrey B. (2014). Entrepreneurial versus managerial competencies as drivers of entrepreneurship education. In M. H. Morris, ed., *Annals of Entrepreneurship Education and Pedagogy*, (pp. 134-151). Cheltenham: Edward Elgar Publishing Limited.

Mulder, M., Gulikers, J., Biemans, H. and Wesselink, R. (2009). The new competence concept in higher education. Error or enrichment? *Journal of European Industrial Training*, 33(8/9), pp. 755-770.

NA (2005). *Qualifikationsrahmen für Deutsche Hochschulabschlüsse* (Im Zusammenwirken von Hochschulrektorenkonferenz, Kultusministerkonferenz und Bundesministerium für Bildung und Forschung erarbeitet und von der Kultusministerkonferenz am 21.04.2005 beschlossen), Berlin.

Norris, D., Brodnick, R., Lefrere, P., Gilmour, J. and Baer, L. (2013). Transforming in an age of disruptive change. Part 1. Back to the future, zooming to the present. *Planning for Higher Education*, 41(2), pp. 1-44.

Orazbayeva, B., Baaken, T. and Meerman, A. (2016). Intercultural Knowledge Transfer in Teams. Findings based on a Case Study. In: Callaos, N.; Hashimoto, S.; Horne, J.; Sánchez B.; Szabo White, M., eds, *Proceedings of the 20th World Multi-Conference on Systemics, Cybernetics and Informatics*, (pp. 190-195), Orlando, Florida, USA.

Pavlin, S. (2014). The role of higher education in supporting graduates' early labour market careers. *International Journal of Manpower*, 35(4), pp. 576-590.

Pavlin, S., Kesting, T. and Baaken, T. (2016). An Integrative View on Higher Education and University-Business Cooperation in the Light of Academic Entrepreneurship. *European Journal of Education*, 51(1), pp. 3-9.

Plewa, C., Galán-Muros, V. and Davey, T. (2015). Engaging business in curriculum design and delivery: a higher education institution perspective. *Higher Education*, 70(1), pp. 35-53.

Rausch, E., Sherman, H. and Washbush, J. B. (2002). Defining and assessing competencies for competency-based, outcome-focused management development. *Journal of Management Development*, 21(3), pp. 184-200.

Rossano, S., Meerman, A., Kesting, T. and Baaken, T. (2016). The Relevance of Problem-based Learning for Policy Development in University-Business Cooperation. *European Journal of Education*, 51(1), pp. 40-55.

Sambamurthy, V., Bharadwaj, A. and Grover, V. (2003). Shaping agility through digital options. Reconceptualizing the role of information technology in contemporary firms. *MIS Quarterly*, 27(2), pp. 237-263.

Skinner, J. D. (1994). Learning by Teaching. *Zielsprache Englisch*, 2(94), pp. 38-39.

Spencer-Rodgers, J. and McGovern, T. (2002). Attitudes toward the culturally different: The role of intercultural communication barriers, affective responses, consensual stereotypes, and perceived threat. *International Journal of Intercultural Relations*, 26(6), pp. 609-631.

Tapscott, D. and Williams, A. (2010). Innovating the 21st-Century University: It's Time! *Educause Review*, 45(1), pp. 16-29.

Teichler, U. (2013). *Hochschule und Arbeitswelt – theoretische Überlegungen, politische Diskurse und empirische Befunde. Studium und Beruf: Studienstrategien–Praxiskonzepte–Professionsverständnis. Perspektiven von Studierenden und Lehrenden nach der Bologna-Reform*. Bielefeld: Transcript Verlag.

Teichler, U. (2003). *Hochschule und Arbeitswelt: Konzeptionen, Diskussionen, Trends*. Frankfurt am Main: Campus Verlag.

Tehseen, S. and Ramayah, T. (2015). Entrepreneurial Competencies and SMEs Business Success. The Contingent Role of External Integration. *Mediterranean Journal of Social Sciences*, 6(1), pp. 50-61.

Ticehurst, G.W. and Veal, A.J. (1999). *Business Research Methods: A Managerial Approach.* Frenchs Forest, NSW: Longman.

Tynan, B., Lee, M. J. W. and Barnes, C. (2008). *Polar bears, black gold and light bulbs. Creating stable futures for tertiary education through instructor training and support in the use of ICTs*. Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications.

Tynan, B. and Lee, M. J. W. (2009). Tales of adventure and change. Academic staff members' future visions of higher education and their professional development needs. *On the Horizon*, 17(2), pp. 98-108.

Van der Sijde, P. (2012). Profiting from knowledge circulation. The gains from university-industry interaction. *Industry & Higher Education*, 26(1), pp. 15-19.

Williams, D. L., Beard, J. D. and Rymer, J. (1991). Team Projects: Achieving their Full Potential, *Journal of Marketing Education*, 13(2), pp. 45-53.

Winterton, J. (2009). Competence across Europe. Highest common factor or lowest common denominator? *Journal of European Industrial Training*, 33(8/9), pp. 681-700.

Yousefi, F. (2006). Reliability and validity of a measure of emotional intelligence in an Iranian sample. *Psychological reports*, 98(2), pp. 541-548.