'MULTICREATION' – PARTICIPATORY LEARNING APPROACH FOR BUSINESS – ACADEMIA COLLABORATION

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Abstract In today's complex, dynamic, information-rich global society, operating in developing countries requires ingenuity and innovative capacity from all stakeholders due to limited resources (especially financial ones), turbulent socio-economic, political and environmental circumstances. Our motivation as relevant participants in the higher education system is to facilitate students to develop their knowledge, skills and competences for facing business world challenges; to help them become able to take entrepreneurial initiatives; and to boost their (self-) confidence. To properly address the multi-dimensional, multi-disciplinary, multi-participant world, we designed our 'MultiCreation' teaching/learning approach. Based on the knowledge matrix, we conceptualized, effectuated and validated it in a business-academia collaboration project during one semester as a problem-based, learning-by-doing, blended-learning approach that encompasses complete course content of four classes (Innovation Management, Change Management, Business Planning and Business Communication) and engages students, professors and managers in various roles towards individual and collective progress.

Motivation and background work

There are various methods that provide practical application of knowledge and learning combined with techniques such as group discussions, case study work, debates, industry visits, workshops, problem-based learning, brainstorming sessions, etc. It is not uncommon that university lectures focus on specific, separate discipline and address case studies from a specific angle (Borrell-Damian, Morais & Smith, 2014), giving the students segmented view and knowledge. However, students need to encompass the big picture and integrated knowledge in order to apply it in real life. There are many types of university-business collaboration options such as R&D collaboration and commercialization, the mobility of academics and students, curriculum development and delivery, lifelong learning, entrepreneurship and governance (Davey, Meerman, Galán-Muros, Orazbayeva & Baaken, 2018), the approach we developed comprises several of them. In this paper, we will elaborate a method that enables multidisciplinary, problem-based, multi-stakeholder project work that enables the creation of many bridges, thus enabling the knowledge triangle among (i) higher education, research and technology, and business (Allinson, Izsak & Griniece, 2012) or (ii) knowledge-education-innovation (OECD, 2004) to function effectively.

The 'MultiCreation' approach integrates the content and instructional design of several courses (further in the text – subjects) in the first cycle studies at our Faculty of Economics. In the first instance, we included subjects Innovation Management, Change Management, Business Planning, and Business Communications. Complementary to multiple disciplines, this allows a broad scope of participants and traces a roadmap of collaboration and communication among the stakeholders towards an effective outcome. All these 2+ aspects are reflected in our decision to name the approach 'Multi-'. The 'Creation' part is self-explanatory; the approach aims to achieve co-evolution, coopetition (cooperation & competition) and emergent effects.

Higher education institutions feel the need to be very close to real business and real life. "More partnerships with companies would be beneficial to help universities provide courses based on the needs of the industry. Without such collaboration, universities will not be able to keep up. One way is through mentors and support systems. Encouragement and guidance make a difference in self-confidence and

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motivation". These are the most recent comments of the City College of New York, Columbia, and NYU deans, who are highly experienced in business-academia collaboration (Goodrich, 2019). The institutions such as the European Institute of Innovation and Technology and the Knowledge and Information Communities perform rich sets of activities, research, events and platforms to activate and maintain the knowledge triangle so that it generates theoretical and applicable knowledge (Allinson et al., 2012). The Council of the European Union's vision for the European Research Area (European Research Area Vision 2020, 2002) is to promote the knowledge triangle and the university-business collaboration in every possible manner; therefore, we find proper alignment from all aspects in our efforts.

This paper will highlight and explain the analysis, the development, the design and the implementation stages and features of the 'MultiCreation' approach as well as the project-wide application and upgrade possibilities in various domains including a broad stakeholder and geographic scope. The argumentation for this lays in the fact that the method draws on managerial sense of problem-based participation and learning. The method implementation has enabled all participants to improve their collaboration, network, creativity, knowledge, skills and competences (CEDEFOP, 2019) and motivation for taking initiatives and investing in co-evolution and coopetition.

Methodology

It is in the essence of the sciences of economics and management to be practical, applicable. It is a core motivation of, especially, higher education teachers, to equip the students both with proper theoretical depth and real-life implementability of knowledge by using multimodal approach and manoeuvring with both traditional and contemporary tools. It is in the hands of the instructional design (David Merrill, Drake, Lacy, Pratt, & the ID2 Research Group, 1996; Wagner, 2011) or didactics (Tubbs, 2014) to effectuate these principles. In order to achieve this outcome, our aim was to design the roadmap for all stakeholders to follow. Our primary customers are the students and our secondary customers are the teachers, the businesses, the immediate and broader environment and other stakeholders. The ADDIE model (Kurt, 2017) introduces analysis, design, development, implementation, and evaluation in formative and summative sense. It is a rather appropriate recommendation for stable and/or dynamic environment where changes occur

rather frequently (students joining in or dropping out of the assignment; not performing, inability to obtain information; altered relations with a business partner; etc.). Different disciplines have different but also very similar ways to achieve consecutive design and evaluation designed around a problem, such as the Action Design Research – ADR (Sein, Henfridsson, Purao, Rossi, & Lindgren, 2011) in the information systems domain, in order to "respond to a dual mission: make theoretical contributions and assist in solving the current and anticipated problems of practitioners" (Sein et al., 2011). In addition, formative evaluation and summative evaluation are incorporated. Having the knowledge matrix (Anderson et al., 2001) in mind, we followed ADDIE with the addition of the ADR design principles in designing our problem-based, learning by doing, blended learning, multi-participant approach.

In the continuation, we will briefly outline the choices we made through the different stages of the development and implementation of the approach.

Analysis – A

In the winter semester of 2018/2019 academic year, a multidisciplinary project assignment under the title "Business analysis and innovative strategies and tactics for development" was realized in cooperation with the Faculty of Economics Prilep and a private IT company with an international outreach. The aim of this project task was to actively involve students from the Faculty of Economics in Prilep in solving the real problems in the business sector.

This project activity involved 52 students (divided into 11 combined groups by subjects and years of study from different study programs and with very discrepant knowledge and background) who attended the courses Business Planning, Change Management, Innovation Management and Business Communication in the winter semester of the 2018/2019 academic year.

The main objectives of the involved teachers were numerous because we adopted the participatory learning and growth approach. Hence, we will discuss the objectives for the following participants: students, higher education institution, and company (managers, owners).

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Objectives for the students:

- to achieve theoretical depth and practical implementation of the acquired knowledge by students at the end of the semester;
- to enable students to obtain knowledge about a domain (in our case the IT domain) to the sufficient level to be able to perceive it from managerial and economic aspects and to contribute to its improvement with increased competences;
- to help students carry out the analysis and evaluation of a company, its internal and external context, and the creation of solutions that are theoretically founded and applicable;
- to improve the skills of problem solving, team-work, situation awareness, time management, creativity, innovativeness, adaptability, initiating change, professional communication;
- to increase the students' manoeuvrability for communication and collaboration platforms and tools;
- to provide a 'feel' for real life, real work and real professional/personal challenges;
- to boost the students' confidence in taking endeavours by themselves, to find ways to push an idea and see immediate and long-term effects; and
- to motivate students with personal example, portraying the worth of investing in our own development now to be able to grow tomorrow (monetarize, expand, improve quality).

Objectives for the higher education institution:

- to establish subject-to-subject and teacher-to-teacher collaboration in a multidisciplinary manner;
- to effectuate bridging academia-business and revive the learning triangle (business-research-innovation);
- to trace a multi-stakeholder collaboration focused around a problem by utilizing various resources in a broad and complex ecosystem;
- to complement lectures with practical use and applicability;
- to build referential reputation as being a competent center for scientifically sound business advice in order to increase partner network and future revenues;

–   to promote the use of e-learning platform and portals per subject, per project, per study group; and

–   to streamline the focus of different subject towards mutual compatibility – perceivable also by the students.

Objectives for the company:

–   to become convinced in the quality of student profiles and their employability by offering hands-on experience in the collaboration and communication with the students;

–   to be given another competent and relevant viewpoint of the company's internal and external context that will help them improve their business; and

–   to gain positive reference for the expansion of collaboration and partnership network.

Some limitations occurred in the project early in the negotiations due to the confidentiality of information that the company cannot share with the teachers and students, some standardization that they needed to pay attention to, and the fact that there was no funding for the project – the teachers invested their own additional time and resources to implement it.

Design – D

The design principles of our approach were to achieve practice-inspired research and theory-ingrained artefact, reciprocal shaping of the participant and their context, and mutually influential roles of the multi-participant landscape (Sein et al., 2011).

We decided to have multimodal learner experience with blended learning mashup as elaborated in Petrevska Nechkoska and Mojsovska Salamovska (2017), consisting of the following e-platforms and traditional channels:

(1) Moodle as an e-learning platform was mainly used for the uploading of materials and for asynchronous, usually one directional, teacher-students communication as well as bi-directional communication through student assignments, forums and other activities. The project portal contained all instructions and the timeline of

developments so that every participant (students, managers, teachers) could always orient, revert, check and project their own and team's actions.

(2) Facebook groups were used for fast, immediate communication where confirmative response was expected.

(3) Storage space in the cloud, USB sticks, etc. were used to store and share information.

(4) Polls, collaborative writing and asynchronous remote project work were done by using the Google Sheets, Forms, Docs and similar tools.

(5) Skype/Viber served as a synchronous remote team communication.

(6) Free mobile apps/messengers for instant messaging were used for urgent matters.

(7) E-mail correspondence was used to communicate among the participants on non-urgent matters.

(8) Teaching and contact hours, as well as the person-to-person consultations and on-campus group/team consultations were organized to facilitate work and share information.

Each of these mashup components contributed to various means of obtaining feedback and taking corrective action for the next iteration.

Development – D

The development of such an extensive undertaking was intense. The teachers prepared numerous modules of materials, lecture and exercise content and timelines and discussed them with the managers. Here are the most important components:

– negotiations with a company, persuasion on potential benefits for the company, specification of problems to be addressed and setting up principles of work;
– memorandum for cooperation between the faculty and the company;

- agreement for internship – to guarantee that the students completed their internship requirements after the semester-long project work for the company;
- the appointment of mentors from the company and from the faculty and the specification of times per week for direct contacts between the students and the managers;
- students' willingness to participate in the project;
- administering e-learning platform portal for the project;
- the preparation of an all-in-one 'orientation' project document for all stakeholders with guidelines on the project, the expectations, the governing principles and communication rules;
- tracing the stages for group work;
- formulating the three problems to be addressed (1. Information sharing climate (bottom-up, lateral, top-down); 2. Employee satisfaction and motivation; and 3. Recruitment and retention in the IT domain);
- aligning the subject lecture and lab exercise materials with the project needs;
- drafting specific obligatory responsibilities for each student participant per subject (up to 10 such responsibilities to be evaluated and graded properly also relation to other non-participating students);
- drafting generic responsibilities for all students (from managerial aspect, professional communication, win-win mind-set, etc.);
- drafting a timeline of activities and paying attention to any necessary modifications;
- setting up teams of students from each subject;
- organizing the final event with all participants;
- organizing PR activities via multiple channels;
- organizing certificates, internship confirmations and other administrative and logistic issues; and
- providing an open communication channel with student information (name, surname, contact) and company recruitment offices responsible for potential employment.

The previously listed components are the foundations of the 'MultiCreation' approach, which can be upgraded and enhanced in the future depending on the scope of application and the number of stakeholders.

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Implementation – I

The project was implemented during one semester, while the preparations took place few months before it. The announcement to students and the recruitment of interested students happened during the first few classes of the semester. The main selling points were that their participation in the project would be an important hands-on experience, especially for the ones aiming for higher grades and for those who would see their participation as a personal challenge. The participating students' average grades throughout their studies had normal distribution. A kick-off event with the presentation from the company was organized and students got a first-hand input from the managers and employees about the company. After the students received guiding materials, the access to the e-learning portal and initial instructions by the professors, they started working. Some synchronization was needed during the lectures and exercises, but students had to do an extra effort to communicate with the team, share responsibilities, set deadlines, etc., as well as communicate back and forth with the teachers and the company. They designed surveys, mystery shopping, online search, competition questioning, interviews and similar activities in order to acquire important knowledge about the IT domain, the global situation and the company from various sources. Twice in the semester, team consultations were held with the professors with participants having 20 minutes each to discuss their status report, plans and findings. Student teams had the responsibility to use the techniques such as brainstorming (Osborn, 1963), mind-mapping (Buzan, Griffiths, & Harrison, 2014), Ishikawa diagram (Ishikawa, 1986), SWOT analysis (Sarsby, 2016), Industrial analysis (Porter, 1979), etc., to identify problems and solutions; to capture the broad business ecosystem and to develop original model for tactical management with roles and accountabilities in order to suggest to the managers how to implement those creative solutions using the Denica method (Petrevska Nechkoska, 2019). Also, they had to communicate that through a written report and in a team presentation.

Evaluation – E

The evaluation of the project is discussed from both formative and summative aspects, which is comprehensive enough to help us determine the achievement of learning outcomes for the project, the goals of the project, and to help us iterate the project later on in other instances.

Formative evaluation happened on a daily basis via communication among all participants. The teachers kept all communication channels open 24/7, they discussed issues and gave answers to the students; the teachers and managers communicated as well and managed open issues in the course of the project. Also, the timeline of activities helped make parallels whether the teams progressed properly; the consecutive official consultations oriented all participants on what was achieved, on the problems and challenges, and on the activities that were still to be implemented. Keeping all communication channels open and enabling proactive questioning as well as initiative from the students enabled a fast recognition of interpersonal issues, intra-team problems, persons who left the project and student exchanges across the teams. It is our opinion that formative evaluation was very significant for bringing the project to completion.

Regarding **summative evaluation**, we gathered feedback about the experience from the project from the students and the company managers/owners.

The founder of the company and general manager and the HR manager were present also on the final event where the teams presented, elaborated and explained their work, their analyses and innovative solutions, and ceremonially handed their reports to the company. Both managers gave remarkable feedback to the students about the project, the professors and the Faculty. Brief excerpts from their evaluation are as follows. The founder/general manager of the company:

> "*With this project, these two professors have proven that everything is not up to the system. People live in the systems; some create, others make ruins. But there are people who change the systems – and your (to the students) two remarkable professors are the ones who change the system of higher education and the economy for the better. The students in the project gave me back my passion to work with young people in this country, to have faith, to apply to my company what you have proposed, and to open space in the IT company for new profiles of your kind – economists, consultants, advisors.*"

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The HR manager:

> "*Every recruiter wants to hear what you've done, what can you do. You had one Mount Everest to climb, and you did it in extraordinary fashion. We got value, we had the opportunity to see our company from a completely different angle, we learned a lot, and we gained many innovative original contributions that we will revise with our managerial team.*"

The students were asked to fill in a questionnaire of 30 questions in different formats to assess and give feedback on their experience with the project to other the team members. At the end, they had to give their opinions in the essay form, which was meant for the company, for the faculty, for the professors, for the state institutions and ultimately, for themselves. All 52 students that reached the final stage gave remarkable statements and insights in the questionnaire. The analysis of the questionnaire helped us evaluate the effectiveness of the project as well as the specific aspects of introduced/improved knowledge, skills, competences we aimed for with this project. Using a 'heat-map' feature, Table 1 presents the most improved cognitive dimensions and knowledge dimensions. The darker colours denote the highest degree of progress made in the specific category whereas the lightest colour denotes the least progress made compared to doing regular seminar paper work and presentations. Considering the fact that for 60% of the students who participated in the project this was their first experience in project work, the clarity of their impressions is much more relevant than if they had participated in many others before.

Table 1: The cognitive dimension and the knowledge dimension categories and components for the 'MultiCreation' approach, presented via a heat-map feature.

The Knowledge Dimension	Remember	Understand	Apply	Analyse	Evaluate	Create
Facts	List, describe, Identify	Discuss	Illustrate	Analyse, break down	Rank, compare	Rearrange, reconstruct
Concepts	Reproduce, recall	Comprehend	Demonstrate	Differentiate	Criticize, defend	Model, generate
Processes	Outline, select	Translates	Perform	Investigate	Assess	Summarize, devise
Procedures	Know, explain	Interpret	Relate, use	Deconstruct	Appraise	Model, generate
Principles	Record	Defend	Choose	Solve	Argue	Modify, develop
Metacognitive	Recognise	Distinguish	Discover	Compare	Relate	Actualize

Note: The lightest scales mean little improvement compared to traditional seminar work; the darkest scales mean most improvement.

Source: Anderson et al., 2001.

It is evident that the students achieved the biggest improvement compared to the ones from the same classes who did not participate in the project and did the regular seminar work. The analysis of the questionnaire competed by 52 respondents confirmed numerous positive transformations from their participation in the project assignment such as team-work, enhanced self-esteem, creativity and motivation; recognizing comprehensive qualities; improved communication skills; the development of skills for research and analysis; improved presentation skills. The processed results identified three significant difficulties faced by the participants in the project: team-work and interpersonal relationships; a lack of materials and time; and insufficient knowledge in the IT domain.

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The students emphasized the following seven key benefits from their active participation in the project (ranked highest according to the number of statements):

1. self-confidence,
2. team-work,
3. communication skills,
4. friendships and networking,
5. practice and experience,
6. new knowledge (IT domain), and
7. satisfaction, motivation and increased ambition.

These results as well as the fact that 100% of the students taking part in the project have an interest in re-participating in the same or similar projects and that 82% of them would like to appear as mentors in future projects confirmed that the set goals and learning outcomes for the students were realized.

The 'MultiCreation' approach components and roadmap

Considering the methodological framework, we differentiated the steps of our 'MultiCreation' approach in relatively generic terms in order to offer any audience a possibility to replicate and instantiate it.

Figure 1 presents the roadmap of how our 'MultiCreation' approach activates the knowledge triangle engine and generates knowledge, value co-creation, participation, and multidisciplinary, multi-stakeholder learning and growth.

> *Stage 0:* Locating the **problem in a real environment** and finding business **partner(s) to collaborate;**
> *Stage 1:* Examining the **study programmes** to find at least 2 subjects that can address the problems through the curriculum;
> *Stage 2:* Responsible **team of professors** addresses the **knowledge base in the respective domains** and search for possible solutions. This step also encompasses the current scientific domains of the chosen subjects;
> *Stage 3:* Informing the **business partner about the research and technology** that will be used to address their problem, examining their aspects of research and technology;

Stage 4: **Organizing** the main components within the HEIs: lectures, lab exercises, students, teams, timeline, documents, consultation, communication lines, etc.;

Stage 5: Investigating **the existing knowledge**, making foundations for the generation and creation of **new innovative solutions and contributions**;

Stage 6: **Guiding students** to apply what they learned in the subjects with what they investigated as possible solutions **towards applying and/or creating new knowledge**;

Stage 7: **Facilitating teamwork** on all sides, clearing up ongoing problems, maintaining communication channels, **receiving feedback (formative and summative)**;

Stage 8: **Checkpoints with the** business **partners** - briefings, fine-tuning, resolving issues, etc., and **finalizing** the project with presentations of the reports and solutions to the initially defined problems, **receiving feedback (formative and summative)**;

Stage 9: **Instigating curiosity** on the business partner's side for making sense of and the application of new solutions to the existing problems as offered by the students / professors;

Stage 10: **Contributing to the instructional design theory and practice**, as well as the **respective disciplines of the investigated problem**, and the **disciplines of the subjects** that took part in the project, **dissemination, multiplication, instantiation**.
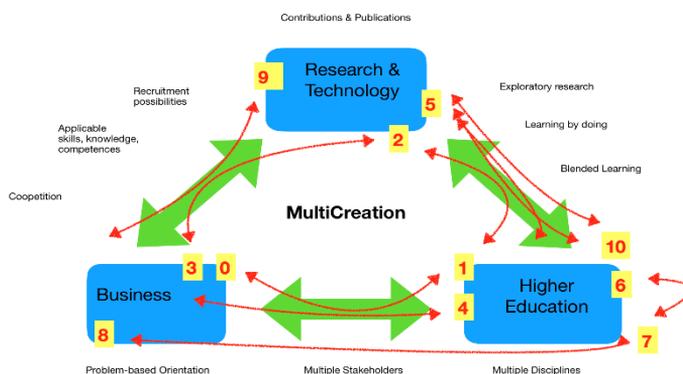

Figure 1: Roadmap of 'MultiCreation' approach activities presented on the Components of the knowledge triangle Source: Authors' research.

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Conclusions and future prospects

With the design and the application of the 'MultiCreation' approach for business-academia collaboration, numerous benefits have been identified for all parties involved, as discussed in this paper. The 'MultiCreation' approach for business-academia collaboration was implemented over the period of one academic semester, with 52 students from four courses at the Faculty of Economics involved. Numerous benefits have been identified for all parties involved. This was done through formative evaluation that happened on a daily basis via communication among all participants and through summative evaluation by using a 30-item questionnaire for students and interviews with the main stakeholders.

However certain limitations are perceived as well. On the one side, it is necessary that businesses dedicate the resources (especially time and human resources) for the agreed action plan. The businesses considered the project as an auxiliary activity even though at the end they were the secondary beneficiary of the project outcomes. Also, high levels of synergy and collaboration are needed among the professors and among the professors and their students, which is not always the case. Paying attention to new guidelines, mind-sets and skills to make participatory learning happen is crucial and for this a lot of effort and individual investment and self-reflection are required. The implementation of this approach in the Western Balkans sometimes means doing it with no extra funding, extending the professional component to a voluntary component, which is always challenging, difficult and may sometimes sabotage the entire project.

For our future developments, we expanded the one-semester implementation of the project, we added societal issues by involving more stakeholders (schools, municipalities, governmental institutions, parents, pupils, students, professors, management, etc.) and we tested our 'MultiCreation' approach in a broader and different domain of social issues. Our further implementation of the presented approach has confirmed its usability not only in economics courses but also in technical sciences courses and its application at other faculties. What we are planning to tackle further on are business and societal modalities with by using crowdfunding, grants, etc. as our funding sources so that we can perfect the approach and its effectiveness especially (but not exclusively) for the context of the Western Balkans (in collaboration with the Western Balkans Alumni Association*).

Acknowledgement

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