

The Report IO6

A set of results of processes' models testing

A set of results of processes' models testing was prepared in the frame of the Project "The acceleration method of development of transversal competences in the students' practical training process".

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1. The aim of task IO6

The aim of task IO6 was to test and implement the developed reference models of acquiring the most important transversal skills from the point of view of entrepreneurs using selected practical teaching methods. The tests were attended by groups of students from all the countries cooperating in the project.

The first step was to develop guidelines for selecting groups for testing. The choice of forms of practical training for testing was carried out on the basis of analyzes made at earlier stages.

Testing consisted in examining the rate of change in the level of skills in the tested processes. After completing the testing phase, each of the Partners participating in it developed test results in the form of databases, evaluations and analyses.

2. The scope of principal work in task IO6:

2.1. Designing the testing process - source: <http://www.awt.org.pl/wp-content/uploads/2017/04/IO5-The-models-of-processes-of-developing-transversal-skills-in-practical-training.pdf>

2.2. Preparing the guidelines concerning test groups and group selection – source – **Appendix No.8 to this Report**

2.3. Process testing – analyzing the rate of change in the level of a skill

2.4. Development of testing results

3. Documents developed in task IO6

3.1. Appendix 1 - Instruction for analyzing the results of testing process X – the following points were characterized in the document:

- The testing process X
- Schedule of conducting process X testing
- Results of research concerning an increase in particular transversal competences (results Questionnaire appendix no. 2)
- Results from Questionnaire appendix 3 - for assessment of the evolution of transversal skills level of the students in practical teaching process (the level of possessed skills)
- Results from Questionnaire appendix 2 - to measure the dynamics of changes in the evolution of acquired transversal competences (degree of change)
- Results of research concerning an increase in the levels of transversal competences of particular students

- Information about testing
- Students' assessment regarding the tested process as beneficial for their professional development
- Description of experiences of researchers testing the process

3.2. Appendix 2 - Development of the results of testing process 1 (PUT) developed on the basis of data obtained from testing process 1, Source: (https://docs.google.com/spreadsheets/d/13rJcXQD8gt5V2WmLy0KEdIPKj2N8Ey dJ73NNFkbG_C0/edit#gid=1605018544)

3.3. Appendix 3 - Development of the results of testing process 2 (Centria UAS) developed on the basis of data obtained from testing process 2, Source: <https://docs.google.com/spreadsheets/d/1scstU1nnMKIKNVR6jghzt6GkwSC-ul8Lf7tS3P55CFQ/edit#gid=1681638907>

3.4. Appendix 4 - Development of the results of testing process 3 (UM FEB) developed on the basis of data obtained from testing process 3, Source: https://docs.google.com/spreadsheets/d/1ZYh_wNN67qYWt_M-Um8gI6pHbM2UwzaaBgHCcslwmI8/edit#gid=1124320405

3.5. Appendix 5 - Development of the results of testing process 3 (WUE) developed on the basis of data obtained from testing process 3, Source: <https://docs.google.com/spreadsheets/d/1qWff7hnHionlg8FUufno9w37GAQp-Ry0KpcyeX699Oo/edit#gid=1365905169>

3.6. Appendix 6 - Development of the results of testing process 4 (UMB) developed on the basis of data obtained from testing process 4, Source: https://docs.google.com/spreadsheets/d/1yNqOL9mjrmaADRYzaxU-x4Ez8cFIubV_RXsKsfJV0YE/edit?usp=drive_web

3.7. Appendix 7 - Development of the results of testing process 5 (CUT) developed on the basis of data obtained from testing process 5, Source: https://docs.google.com/spreadsheets/d/19rawbsjzmq62KMErxsAQjcl5EOUv_3C9KaK219HQnBo/edit#gid=2082828191

3.8. Appendix 8 – Selection of test groups

3.1. APPENDIX NO. 1

Instruction for analyzing the results of testing process X

(where X – number of testing process in one's own university)

1. Process X presentation

Please present **the figure of process X testing;**

Figure 1. Application of practical teaching methods in process X.

Questionnaire appendix No. 2 - to measure the dynamics of changes in the evolution of acquired transversal competences (degree of change)

Questionnaire appendix No. 3 - for assessment of the evolution of transversal skills level of the students in practical teaching process (the level of possessed skills)

Note: *concerns the appendix to the instruction developed in task 5*

https://drive.google.com/drive/folders/0B8IR3KLVVT_sQkUzdFJlb3p6dkk

2. Schedule of testing process X

Date	Time	Subject	Process stage	Duration	Place	Testers	Number of participants in classes/number of filled-in questionnaires

Testing group data: **Faculty:** **Field of study:**, **Year:**, **Sem.** -cycle studies

The number of students taking part in the research was..... (please indicate the number of student participants), out of whom (please indicate the number of students taking part in the entire research process) took part in the entire research process. All the questionnaires were filled in by (please indicate the number of students who filled in the questionnaire) students. Data that was rejected was the one provided by students who did not participate in the full research process, e.g. filled in questionnaire No. 2 and not No. 3, or they participated only in one or two testing stages. Data analysis comprised results provided by (please indicate the number of students who filled in all the questionnaires) students, which is compliant with "Instruction for preparing and testing models of processes of developing transversal skills as part of practical training" where the minimum number of students is 15.

3. Results of research concerning an increase in particular transversal competences (results questionnaire appendix 2) for n=.... (students)

Entrepreneurship – indicators		M1 – results average	M2 – results average	M3 – results average	Average of an increase in component competences after all the methods	Open question
1.1.	Ability to effect and accept changes	Sum of all students' evaluations w1.1 after method M1 divided by the number of students	Sum of all students' evaluations w1.1 after method M2 divided by the number of students	Sum of all students' evaluations w1.1 after method M3 divided by the number of students	Sum of all students' evaluations w1.1 after M1, M2 and M3 divided by 3*number of students	
1.2.	Ability to perform a critical evaluation of entrepreneurial opportunities	Sum of all students' evaluations w1.2 after method M1 divided by the number of students	Sum of all students' evaluations w1.2 after method M2 divided by the number of students	Sum of all students' evaluations w1.2 after method M3 divided by the number of students	Sum of all students' evaluations w1.2 after M1, M2 and M3 divided by 3*number of students	
1.3.	Ability to plan creative solutions	Sum of all students' evaluations w1.3 after method M1 divided by the number of students	Sum of all students' evaluations w1.3 after method M2 divided by the number of students	Sum of all students' evaluations w1.3 after method M3 divided by the number of students	Sum of all students' evaluations w1.3 after M1, M2 and M3 divided by 3*number of students	
1.4.	Ability to come up with new, creative solutions	
1.5.	Ability to undertake rational risk	
1.6.	Ability to change ideas into specific activity	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		Sum of all students' evaluations of indicators from w1.1 to w1.6 after method M1 divided by 6*	Sum of all students' evaluations of indicators from w1.1 to w1.6 after method M2 divided by 6*	Sum of all students' evaluations of indicators from w1.1 to w1.6 after method M3 divided by 6*		

	Creativity – indicators	M1 – results average	M2 – results average	M3 – results average	Average of an increase in component competences after all the methods	Open question
2.1.	Ability to make use of creative thinking	Sum of all students' evaluations w2.1 after method M1 divided by the number of students	Sum of all students' evaluations w2.1 after method M2 divided by the number of students	Sum of all students' evaluations w2.1 after method M3 divided by the number of students	Sum of all students' evaluations w2.1 after M1, M2 and M3 divided by 3*number of students	
2.2.	Ability to come up with original and useful solutions to problems	Sum of all students' evaluations w2.2 after method M1 divided by the number of students	Sum of all students' evaluations w2.2 after method M2 divided by the number of students	Sum of all students' evaluations w2.2 after method M3 divided by the number of students	Sum of all students' evaluations w2.2 after M1, M2 and M3 divided by 3*number of students	
2.3.	Ability to develop new concepts or new associations with existing ideas and concepts	Sum of all students' evaluations w2.3 after method M1 divided by the number of students	Sum of all students' evaluations w2.3 after method M2 divided by the number of students	Sum of all students' evaluations w2.3 after method M3 divided by the number of students	Sum of all students' evaluations w2.3 after M1, M2 and M3 divided by 3*number of students	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		Sum of all students' evaluations of indicators from w2.1 to w2.3 after method M1 divided by 3* number of students	Sum of all students' evaluations of indicators from w2.1 to w2.3 after method M2 divided by 3* number of students	Sum of all students' evaluations of indicators from w2.1 to w2.3 after method M3 divided by 3* number of students		

	Teamwork – indicators	M1 – results average	M2 – results average	M3 – results average	Average of an increase in component competences after all the methods	Open question
3.1.	Ability to be actively engaged in tasks	Sum of all students' evaluations w3.1 after method M1 divided by the number of students	Sum of all students' evaluations w3.1 after method M2 divided by the number of students	Sum of all students' evaluations w3.1 after method M3 divided by the number of students	Sum of all students' evaluations w3.1 after M1, M2 and M3 divided by 3*number of students	
3.2.	Ability to create nice atmosphere and positive relations					
3.3.	Ability to solve conflicts in a group					
3.4.	Ability to motivate others to act					
3.5.	Ability to encourage others to achieve a mutual goal					
3.6.	Ability to respect norms and principles of a group and other people's opinion and ideas					
3.7.	Ability to convey information in an effective way					
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		Sum of all students' evaluations of indicators from w3.1 to w3.7after method M1 divided by 7* number of students	Sum of all students' evaluations of indicators from w3.1 to w3.7after method M2 divided by 7* number of students	Sum of all students' evaluations of indicators from w3.1 to w3.7after method M3 divided by 7* number of students		

	Communicativeness – indicators	M1 – results average	M2 – results average	M3 – results average	Average of an increase in component competences after all the methods	Open question
4.1.	Ability to convey and receive information in a reliable way	Sum of all students' evaluations w4.1 after method M1 divided by the number of students	Sum of all students' evaluations w4.1 after method M2 divided by the number of students	Sum of all students' evaluations w4.1 after method M3 divided by the number of students	Sum of all students' evaluations w4.1 after M1, M2 and M3 divided by 3*number of students	
4.2.	Ability to establish and maintain appropriate interpersonal relations					
4.3.	Ability to express and interpret notions, thoughts and opinions in speaking and writing in a clear and understandable way					
4.4.	Ability to interpret nonverbal communication					
4.5.	Ability to listen and respect other people's opinion					
4.6.	Ability to negotiate					
4.7.	Ability to express and defend one's own opinion					
4.8.	Ability to make self-presentation and speak in public					
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		Sum of all students' evaluations of indicators from w4.1 to w4.8 after method M1 divided by 8*number of students	Sum of all students' evaluations of indicators from w4.1 to w4.8 after method M2 divided by 8*number of students	Sum of all students' evaluations of indicators from w4.1 to w4.8 after method M3 divided by 8*number of students		

W1.1. – W4.8. – competence indicators

For teamwork and communicativeness competences results are calculated in the same way as in case of the remaining competences.

4. Results from Questionnaire appendix 3 - for assessment of the evolution of transversal skills level of the students in practical teaching process (the level of possessed skills)

	Average result questionnaire 3 (average level of a skill prior to testing)	Average result questionnaire 3 (average level of a skill prior to testing)
Entrepreneurship	Sum of all evaluations of Entrepreneurship indicators prior to testing divided by 6*number of students	Sum of all evaluations of Entrepreneurship indicators after testing divided by 6*number of students
Creativity	Sum of all evaluations of Creativity indicators prior to testing divided by 3*number of students	Sum of all evaluations of Creativity indicators after testing divided by 3*number of students
Teamwork	Sum of all evaluations of Teamwork indicators prior to testing divided by 7*number of students	Sum of all evaluations of Teamwork indicators after testing divided by 7*number of students
Communicativeness	Sum of all evaluations of Communicativeness indicators prior to testing divided by 8*number of students	Sum of all evaluations of Communicativeness indicators after testing divided by 8*number of students

5. Results from Questionnaire appendix 2 - to measure the dynamics of changes in the evolution of acquired transversal competences (degree of change)

	Method I - Average result of an increase in a skill questionnaire 2	Method II - Average result of an increase in a skill questionnaire 2	Method II - Average result of an increase in a skill questionnaire 2
Entrepreneurship	Sum of all students' evaluations of indicators from w1.1 to w1.6 after method M1 divided by 6*number of students	Sum of all students' evaluations of indicators from w1.1 to w1.6 after method M2 divided by 6*number of students	Sum of all students' evaluations of indicators from w1.1 to w1.6 after method M3 divided by 6*number of students
Creativity	Sum of all students' evaluations of indicators from w2.1 to w2.3 after method M1 divided by 3*number of students	Sum of all students' evaluations of indicators from w1.1 to w1.6 after method M2 divided by 6*number of students	Sum of all students' evaluations of indicators from w1.1 to w1.6 after method M3 divided by 6*number of students
Teamwork	Sum of all students' evaluations of indicators from w3.1 to w3.7 after method M1 divided by 7*number of students	Sum of all students' evaluations of indicators from w3.1 to w3.7 after method M2 divided by 7*number of students	Sum of all students' evaluations of indicators from w3.1 to w3.7 after method M3 divided by 7*number of students
Communicativeness	Sum of all students' evaluations of indicators from w4.1 to w4.8 after method M1 divided by 8*number of students	Sum of all students' evaluations of indicators from w4.1 to w4.8 after method M2 divided by 8*number of students	Sum of all students' evaluations of indicators from w4.1 to w4.8 after method M3 divided by 8*number of students

6. Results of research concerning an increase in the levels of transversal competences of particular students (n=16)

M1						M2					M3				
Student No.	method 1 Entrepreneurship (average)	method 1 Creativity (average)	method 1 Teamwork (average)	method 1 Communicativeness (average)	AVERAGE AFTER Method 1	Method 2 Entrepreneurship (average)	Method 2 Creativity (average)	Method 2 Teamwork (average)	Method 2 Communicativeness (average)	AVERAGE AFTER Method 2	Method 3 Entrepreneurship (average)	Method 3 Creativity (average)	Method 3 Teamwork (average)	Method 3 Communicativeness (average)	AVERAGE AFTER Method 3
student 1	sum W1.1:W1.6/6	sum W2.1:W2.3/3	sum W3.1:W3.7/7	sum W4.1:W4.8/8	sum (W1.1:W4.8)/24										
student 2	sum W1.1:W1.6/6	sum W2.1:W2.3/3	sum W3.1:W3.7/7	sum W4.1:W4.8/8	sum (W1.1:W4.8)/24										
student 3	sum W1.1:W1.6/6	sum W2.1:W2.3/3	sum W3.1:W3.7/7	sum W4.1:W4.8/8	sum (W1.1:W4.8)/24										
student 4	sum W1.1:W1.6/6	sum W2.1:W2.3/3	sum W3.1:W3.7/7	sum W4.1:W4.8/8	sum (W1.1:W4.8)/24										
...
student n	sum W1.1:W1.6/6	sum W2.1:W2.3/3	sum W3.1:W3.7/7	sum W4.1:W4.8/8	sum (W1.1:W4.8)/24										

EXPLANATORY NOTES:

n – number of students who participated in the entire process and filled in all the questionnaires

W1.1. : W4.8.- numbers of consecutive competence indicators

For methods 2 and 3 results are calculated in the same way as in case of method 1.

7. Information about testing

Please fill in the table.

	Method I	Method II	Method III
Testing start day			
Testing start time			
Testing end day			
Testing end time			
Duration of testing (in minutes)			
Number of meetings with students			
Number of dean's groups			
Number of test groups during a meeting			
Average size of test groups during a meeting			
Number of instructors			
Number of courses/subjects where methods were tested			
Type of activity			
Language of communication			
Nationality of testers			
Hofstede comparing cultures – Please complete the following data concerning your own culture using internet sources			
Power distance			
Individualism			
Masculinity			

Uncertainty Avoidance	
Long Term Orientation	
Indulgence	

8. Students' assessment regarding the tested process as beneficial for their professional development

Assessment indicator	Numbers of students	Percentage of students
0 – no impact on the development		
1 – beneficial in a very small extent		
2 – beneficial in a small extent		
3 - beneficial in a medium extent		
4 - beneficial in a high extent		
5 - beneficial in a very high extent		

9. Description of experiments conducted by researchers testing process X

Please write your remarks, observations noted by individuals conducting research.

3.2. APPENDIX NO. 2

Development of the results of testing process 1 (PUT)

1. Process 1 presentation

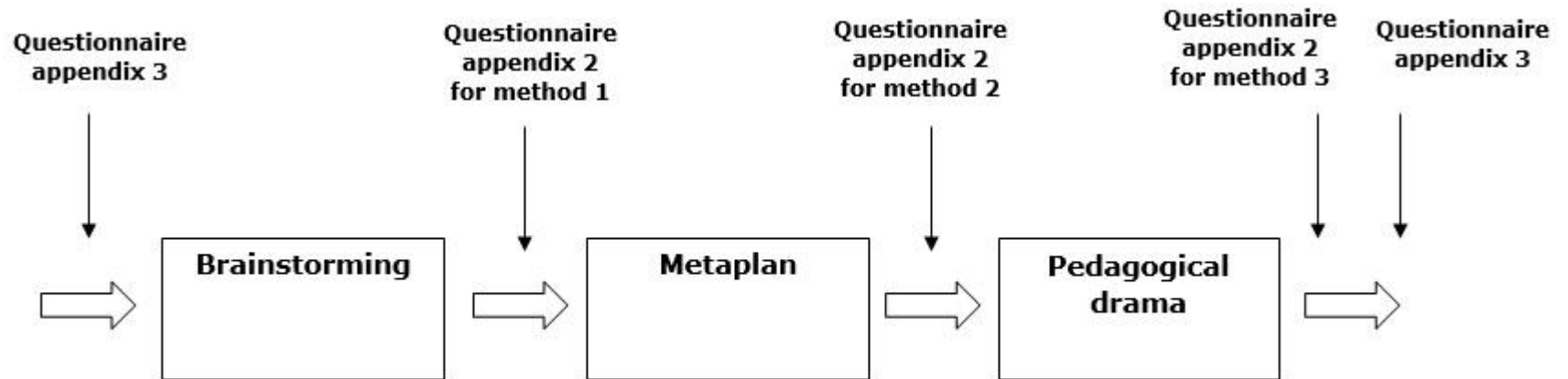


Figure 1. Application of practical teaching methods in process 1 - PUT.

Questionnaire appendix 2 - to measure the dynamics of changes in the evolution of acquired transversal competences (degree of change)

Questionnaire appendix 3 - for assessment of the evolution of transversal skills level of the students in practical teaching process (the level of possessed skills)

2. Schedule of conducting process 1 testing (PUT)

Date	Time	Subject	Process stage	Duration	Place	Testers	Number of participants in classes / number of filled-in questionnaires
27.02.17	8:45 - 9:30	internet and mobile marketing	STAGE I OF METHOD I - Introduction to the project and process	45 min	Strzelecka 11, Poznan University of Technology, tutorial and laboratory room	instructor: M. Goliński, PhD, Eng.;	32/ NA
02.03.17	8:00 - 9:30	internet and mobile marketing	STAGE II OF METHOD I - Filling in the questionnaire concerning the level of transversal competences at the beginning of testing; characteristics of method I - Brainstroming ; dividing students into groups; running classes using brainstorming.	90 min	Strzelecka 11, Poznan University of Technology, tutorial and laboratory room	instructor: M. Goliński, PhD, Eng.; M. Szafrąński, PhD, Eng.; M. Spychała, PhD, Eng.	28/ 28
13.03.17	11:15 - 12:00	internet and mobile marketing	STAGE III OF METHOD I - Summing up the results concerning solving problems; filling in the questionnaire concerning an increase in transversal competences after using method I brainstorming	45 min	Strzelecka 11, Poznan University of Technology, tutorial and laboratory room	instructor: M. Goliński, PhD, Eng.; M. Szafrąński, PhD, Eng.; M. Spychała, PhD, Eng.	28/28
13.03.17	12:00 - 13:00	motivation systems	STAGE I OF METHOD II - Introduction to method II , discussing the idea - Metaplan , presentation of problems concerning designing motivation systems	60 min	Strzelecka 11, Poznan University of Technology, tutorial and laboratory room	instructor: M. Spychała, PhD, Eng. M. Szafrąński, PhD, Eng.; M. Goliński, PhD, Eng.	22/ NA
13.03.17	13:15 - 14:45	motivation systems	STAGE II OF METHOD II – Conducting classes using metaplan, presenting solutions prepared by students, summing up students’ solutions, choosing the best solution, filling in the questionnaire concerning an increase in transversal competences using method II metaplan	90 min	Strzelecka 11, Poznan University of Technology, tutorial and laboratory room	instructor: M. Spychała, PhD, Eng. M. Szafrąński, PhD, Eng.; M. Goliński, PhD, Eng.	22/20
16.03.17	8:00 - 9:30	internet and mobile marketing	STAGE I OF METHOD III – Characteristics of method III - Pedagogical drama ; conducting classes using method III.	90 min	Strzelecka 11, Poznan University of Technology, tutorial and laboratory room	instructor: M. Goliński, PhD, Eng.; M. Graczyk - Kucharska, PhD, Eng. M. Szafrąński, PhD, Eng.; M. Spychała, PhD, Eng. representatives of 3	27/NA

						businesses from the Wielkopolska Region	
16.03.17	9:45 - 10:30	internet and mobile marketing	STAGE II OF METHOD III – Summing up the results; filling in the questionnaire concerning an increase in transversal competences after using method III pedagogical drama . Filling in the questionnaire concerning an increase in transversal competences after the entire testing process	45 min	Strzelecka 11, Poznan University of Technology, tutorial and laboratory room	instructor: M. Goliński, PhD, Eng.; M. Szafranski, PhD, Eng.; M. Spychala, PhD, Eng.	27/27

Testing group data: **Faculty:** Management Engineering, **Field of study:** Management Engineering, **Year:** 2, **Sem.** 3, Second-cycle studies.

The research comprised 32 students, out of whom 22 took part in the entire research process. All the questionnaires were filled in by 16 students. Data that was rejected was the one provided by students who did not participate in the entire research process, e.g. filled in questionnaire 2 and not 3, or they participated in one or two testing stages. Data analysis comprised results provided by 16 students, which is compliant with "Instruction for preparing and testing models of processes of developing transversal skills as part of practical training" where the minimum number of students is 15.

3. Results of research concerning an increase in particular transversal competences (results Questionnaire appendix no. 2) for n=16 (students)

	Entrepreneurship – indicators	brainstorming - average	metaplan - average	pedagogical drama - average	Average of an increase in component	Open question
1.1.	Ability to effect and accept changes	2.44	2.44	1.56	2.15	form of work is effective; making instructions more precise, exact determining of working time and integration of instructors; it is a good idea to join groups as it affords a wider perspective; working in smaller groups during the next stage is recommended, more time, more activities, classes run in an appropriate way
1.2.	Ability to perform a critical evaluation of entrepreneurial opportunities	2.40	2.19	2.38	2.27	
1.3.	Ability to plan creative solutions	2.88	2.69	2.19	2.58	
1.4.	Ability to come up with new, creative solutions	2.81	2.63	2.06	2.50	
1.5.	Ability to undertake rational risk	1.88	1.81	1.13	1.6	
1.6.	Ability to change ideas into specific activity	2.38	2.56	1.81	2.25	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		2.44	2.39	1.85		

	Creativity – indicators	brainstorming - average	metaplan - average	pedagogical drama - average	Average of an increase in component competences after all the methods	Open question
2.1.	Ability to make use of creative thinking	2.44	2.44	1.88	2.25	Activities with abstract concepts, extreme situations; Introduce types of activities which are approved of by participants. Creativity will not emerge if it is forced. Choosing group members at random. More coloured marker pens. Analysing situations more susceptible to creative thinking (it is hard to get exceptional ideas when dealing with mundane subjects), random teams
2.2.	Ability to come up with original and useful solutions to problems	2.44	2.63	2.06	2.38	
2.3.	Ability to develop new concepts or new associations with existing ideas and concepts	2.5	2.19	1.88	2.19	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		2.46	2.42	1.94		
	Teamwork -indicators	brainstorming - average	metaplan - average	pedagogical drama - average	Average of an increase in component competences after all the methods	Open question
3.1.	Ability to be actively engaged in tasks	2.63	2.75	2.63	2.67	Join in groups of diverse composition, creating groups which will be of the same composition during all the processes. Diversity of groups due to interests. Assigning roles in a more precise way. More time for working together. Let participants create their own groups. The same number of people in a team.
3.2.	Ability to create nice atmosphere and positive relations	2.94	3.213	2.5	2.85	
3.3.	Ability to solve conflicts in a group	2.19	2.13	1.44	1.92	
3.4.	Ability to motivate others to act	2.13	2.50	2.06	2.23	
3.5.	Ability to encourage others to achieve a mutual goal	2.63	2.50	2.06	2.40	
3.6.	Ability to respect norms and principles of a group and other people's opinion and ideas	2.63	2.50	2.06	2.40	
3.7.	Ability to convey information in an effective way	2.44	2.63	2.88	2.65	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		2.51	2.59	2.23		

	Communicativeness - indicators	brainstorming - average	metaplan - average	pedagogical drama - average	Average of an increase in component competences after all the methods	Open question
4.1.	Ability to convey and receive information in a reliable way	2.31	2.25	2.31	2.29	Individual utterances, stating opinions about others (individual); More time for practising and more activities. Enforcing official group division (it would be a good activity related to creating a team)
4.2.	Ability to establish and maintain appropriate interpersonal relations	2.75	2.56	2.50	2.60	
4.3.	Ability to express and interpret notions, thoughts and opinions in speaking and writing in a clear and understandable way	2.63	2.69	2.56	2.63	
4.4.	Ability to interpret nonverbal communication	1.69	1.69	1.88	1.75	
4.5.	Ability to listen and respect other people's opinion	2.31	2.75	2.50	2.52	
4.6.	Ability to negotiate	2.13	2.06	1.63	1.94	
4.7.	Ability to express and defend one's own opinion	2.25	2.25	2.44	2.31	
4.8.	Ability to make self-presentation and speak in public	1.56	1.63	2.00	1.73	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		2.2	2.23	2.23		

4. Results from Questionnaire appendix 3 - for assessment of the evolution of transversal skills level of the students in practical teaching process (the level of possessed skills)

	Average result questionnaire 3 (average level of a skill prior to testing)	Average result questionnaire 3 (average level of a skill after testing)
Entrepreneurship	3.19	3.39
Creativity	3.06	3.50
Teamwork	3.60	3.99
Communicativeness	3.38	3.73

5. Results from Questionnaire appendix 2 - to measure the dynamics of changes in the evolution of acquired transversal competences (degree of change)

	Method I (brainstorming) - Average result of an increase in a skill questionnaire 2	Method II (metaplan) - Average result of an increase in a skill questionnaire 2	Method III (pedagogical drama) - Average result of an increase in a skill questionnaire 2
Entrepreneurship	2.44	2.39	1.85
Creativity	2.46	2.42	1.94
Teamwork	2.51	2.59	2.23
Communicativeness	2.20	2.23	2.23

6. Results of research concerning an increase in the levels of transversal competences of particular students

Student No.	M1 - brainstorming					M2 - metaplan					M3 - pedagogical drama				
	M1 Entrepreneurship (average)	M1 Creativity (average)	M1 Teamwork (average)	M1 Communicativeness (average)	AVERAGE AFTER M1	M2 Entrepreneurship (average)	M2 Creativity (average)	M2 Teamwork (average)	M2 Communicativeness (average)	AVERAGE AFTER M2	M3 Entrepreneurship (average)	M3 Creativity (average)	M3 Teamwork (average)	M3 Communicativeness (average)	AVERAGE AFTER M3
110600	3.50	3.67	4.86	4.13	4.13	2.50	3.00	3.71	3.50	3.25	3.00	2.67	3.14	3.00	3.00
110633	1.67	1.67	1.57	0.50	1.25	1.67	1.33	1.43	0.63	1.21	1.17	1.33	0.71	0.88	0.96
110638	0.83	1.33	0.43	0.50	0.67	0.17	1.00	1.43	0.75	0.83	0.67	1.00	1.29	1.00	1.00
110641	1.50	3.00	2.29	2.88	2.38	3.33	4.00	4.29	3.63	3.79	1.83	3.33	3.86	3.25	3.08
110642	1.83	1.67	1.57	0.88	1.42	1.33	0.33	0.57	1.00	0.88	1.17	0.67	3.86	4.50	3.00
110644	3.50	3.67	3.86	3.38	3.58	3.50	2.67	2.86	3.00	3.04	2.33	3.00	3.00	2.50	2.67
110656	3.40	3.33	4.00	3.75	3.54	2.33	2.33	2.71	2.25	2.42	1.33	1.33	0.71	0.50	0.88
110681	1.33	1.00	0.86	0.88	1.00	1.50	0.33	1.00	0.63	0.92	1.50	0.33	2.29	2.00	1.75
110682	2.33	1.33	1.57	0.63	1.42	1.00	2.00	1.71	1.13	1.38	0.50	0.00	0.86	0.88	0.67
110696	3.83	4.00	4.14	2.56	4.17	3.17	4.00	4.14	3.38	3.63	2.17	3.33	2.71	3.50	2.92

111177	0.17	0.33	0.57	0.38	0.38	1.17	1.33	1.71	1.63	1.50	0.83	1.00	1.14	1.13	1.04
111270	3.33	3.00	1.29	1.50	2.08	1.00	1.00	1.14	1.00	1.04	0.50	1.00	0.14	0.25	0.38
129607	1.50	1.00	2.00	2.13	1.79	2.83	2.00	2.86	2.13	2.50	1.83	1.33	1.43	1.88	1.67
129614	5.00	5.00	5.00	5.00	5.00	4.67	5.00	3.86	4.13	4.29	4.33	4.00	3.71	3.75	3.92
129647	2.00	2.00	3.00	1.25	2.04	4.00	4.00	3.86	3.00	3.63	3.00	3.00	3.43	2.75	3.04
129685	3.83	3.33	3.14	3.00	3.29	4.00	4.33	4.14	4.00	4.08	3.50	3.67	3.43	3.88	3.63
	2.44	2.46	2.51	2.20		2.39	2.42	2.59	2.23		1.85	1.94	2.23	2.23	

7. Information about testing

	Method I (brainstorming)	Method II (metaplan)	Method III (pedagogical drama)
Testing start day	27.02.2017	13.03.2017	16.03.2017
Testing start time	8:45	12:00	8:00
Testing end day	13.03.2017	13.03.2017	16.03.2017
Testing end time	12:00	14:45	10:30
Duration of testing (min)	180	150	135
Number of meetings with students	3	2	2
Number of dean's groups	4	4	4
Number of test groups during a meeting	4	4	4
Average size of test groups during a meeting	30	22	27
Number of instructors	1	2	3
Number of courses/subjects where methods were tested	1	1	1
Type of activity	internet and mobile marketing	motivation systems	internet and mobile marketing

Language of communication	Polish
Nationality of testers	POLAND
Hofstede comparing cultures https://www.hofstede-insights.com/country-comparison/	
Power distance	At a score of 68 Poland is a hierarchical society. - People accept a hierarchical order in which everybody has a place and which needs no further justification.
Individualism	Poland, with a score of 60 - Individualist society. - there is a high preference for a loosely-knit social framework in which individuals are expected to take care of themselves and their immediate families only.
Masculinity	Poland scores 64 - a Masculine society. - people "live in order to work", - managers are expected to be decisive and assertive, - the emphasis is on equity, competition and performance - conflicts are resolved by fighting them out.
Uncertainty Avoidance	Poland scores 93 - a very high preference for avoiding uncertainty. - maintains rigid codes of belief and behaviour and are intolerant of unorthodox behaviour and ideas. - time is money, - people have an inner urge to be busy and work hard, - precision and punctuality are the norm, - security is an important element in individual motivation.
Long Term Orientation	Poland's low score of 38 in this dimension - it is more normative than pragmatic. People in such societies have a strong concern with establishing the absolute Truth; they are normative in their thinking. They exhibit great respect for traditions, a small propensity to save for the future, and a focus on achieving quick results
Indulgence	With a low score of 29, Polish culture is one of Restraint. - a tendency to cynicism and pessimism. <hr/> - Restrained societies do not put much emphasis on leisure time and control the gratification of their desires. People have the perception that their actions are Restrained by social norms and feel that indulging themselves is somewhat wrong.

8. Students' assessment regarding the tested process as beneficial for their professional development.

Assessment indicator	Numbers of students	Percentage of students
0 - no impact on the development	0	-
1 - beneficial in a very small extent	0	-
2 - beneficial in a small extent	0	-
3 - beneficial in a medium extent	0	-
4 - beneficial in a high extent	9	56%
5 - beneficial in a very high extent	7	44%

9. Description of experiences of researchers testing the process

- Each time the group was divided into teams to ensure proper organization of testing work.
- We analyzed an increase in an individual and not a group.
- With each method, students worked in various teams. It was difficult to keep the same groups as not all the students attended the classes.
- The students were divided into groups, with the size of 5 to 8.

3.3. APPENDIX NO. 3

Development of the results of testing process 2 (Centria UAS)

1. Process 2 presentation

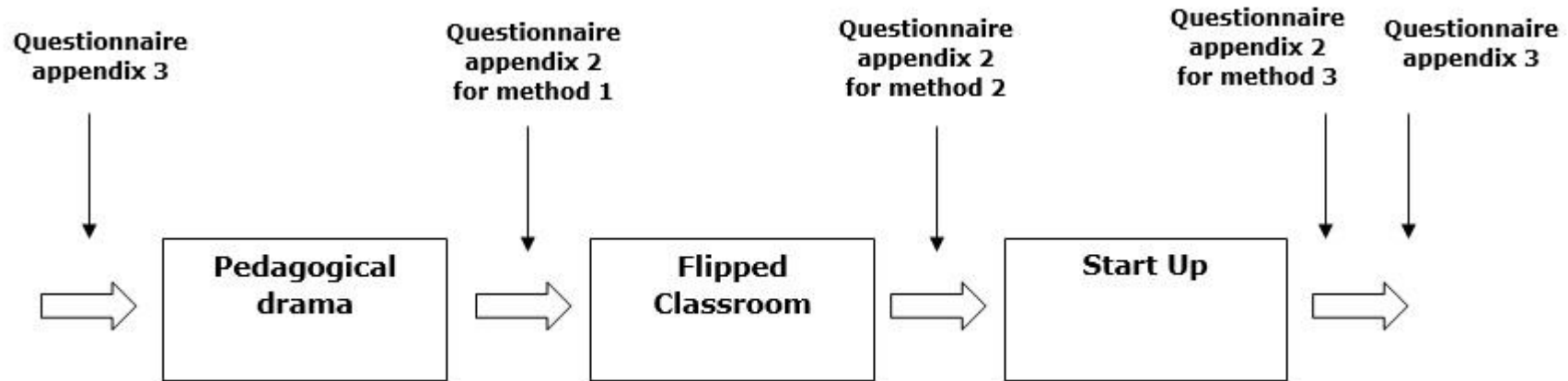


Figure 1. Application of practical teaching methods in process 2.

Questionnaire appendix No. 2 - to measure the dynamics of changes in the evolution of acquired transversal competences (degree of change)

Questionnaire appendix No. 3 - for assessment of the evolution of transversal skills level of the students in practical teaching process (the level of possessed skills)

Note: concerns the appendix to the instruction developed in task 5

https://drive.google.com/drive/folders/0B8IR3KLVVT_sQkUzdFJlb3p6dkk

2. Schedule of testing process 2

Date	Time	Subject	Process stage	Duration	Place	Testers	Number of participants in classes/number of filled-in questionnaires
20.2.2017	13-13.15	Project and Process	STAGE I OF METHOD 1 Pedagogical Drama: Introduction to the project and process and testing	15 min	Centria UAS YLIVIESKA Vierimaant 7 Room C 240	Eija Huotari PhD Kaija Arhio PhD Marja-Liisa Kaakko, MSc	15 students/15
20.2.2017	13.15-14.15	Teaching method drama	STAGE I OF METHOD 1 Pedagogical Drama: Contacting the students and introduction to the Drama	60 min	Centria UAS YLIVIESKA Vierimaant 7 Room C 240	Eija Huotari PhD Kaija Arhio PhD Marja-Liisa Kaakko, MSc	15/15
20.2.2017	14.30 – 15.15	Business problems at students' companies	STAGE II OF METHOD 1 Pedagogical Drama: Filling in the questionnaire 3 concerning the level of transversal competences at the beginning of testing. ; characteristics of method I – Drama, deviding students into groups running classes using drama, making presentations, videos etc. of their start up companies	45 min	Centria UAS YLIVIESKA Vierimaant 7 Room C 240	Eija Huotari PhD Kaija Arhio PhD Marja-Liisa Kaakko, MSc	15/15
27.2.2017	13 – 14.30	Pedagogical drama as consulting the students' companies	STAGE III OF METHOD 1 Pedagogical Drama: The participants choose the most interesting ideas for companies development and solving problems of the Start Up companies. Sudents take roles : owners, consultant, stakeholders, customers, bookkeepers, marketing managers, etc. and using drama they give good advice to others.	60 min	Centria UAS YLIVIESKA Vierimaant 7 Room C 240	Eija Huotari PhD Kaija Arhio PhD Marja-Liisa Kaakko MSc	15/15
27.2.2017	15 – 15.30	Testing	STAGE III of METHOD 1 : Summing up the results concerning pedagogical drama ; filling in the questionnaire 2 concerning an increase in transversal competences after using method I pedagogical drama	30 min	Centria UAS YLIVIESKA Vierimaant 7 Room C 240	Eija Huotari PhD Kaija Arhio PhD Marja-Liisa Kaakko MSc	15/15

3.4. 2017	13-13.30	Teaching method Flipped Classroom	STAGE I OF METHOD 2 Flipped Classroom: Introduction to the method	30 min	Centria UAS YLIVIESKA Vierimaant 7 Room C 240	Eija Huotari PhD	15/15
3.4. 2017	14.00 – 14.45	Marketing, Book-keeping, Mana-gement	STAGE II OF METHOD 2 Flipped Classroom: presenting the solutions of using flipped classroom, student ´s in groups making teaching the theme, which they have in their start ups	60 min	Centria UAS YLIVIESKA Vierimaant 7 Room C 240	Eija Huotari PhD	15/5
3.4. 2017	15 – 15.45	Students ´ presentations and testing	STAGE III OF METHOD 2 Flipped Classroom: Summing up the results concerning flipped classroom; filling in the questionnaire 2 concerning an increase in transversal competences after using method II flipped classroom	30 min	Centria UAS YLIVIESKA Vierimaant 7 Room C 240	Eija Huotari PhD	15/5
24.4. 2017	13 -13.15		STAGE 1 OF METHOD 3 : Introducing the seminar	15 min	Centria UAS YLIVIESKA Vierimaant 7 Room C 240	Eija Huotari PhD Kaija Arhio PhD Marja-Liisa Kaakko MSc	15/5
24.4. 2017	13.15 – 14.45	Entrepreneur- ship	STAGE I OF METHOD 3 : Start Up Students ´ presentations of their own companies, annual reports, experiences as an entrepreneurs	90	Centria UAS YLIVIESKA Vierimaant 7 Room C 240	Eija Huotari PhD Kaija Arhio PhD Marja-Liisa Kaakko MSc	15/5
24.4. 2017	15 – 15.30	Learning Cafe	STAGE II OF METHOD 3 : Start Up: Discussing of Running the Business : Evaluating the the NY companies ; self- estimates of the students and coaches estimates too, summing up the results concerning Start up; filling in the questionnaire 2 concerning an increase in transversal competences after using method II Start up method	30 min	Centria UAS YLIVIESKA Vierimaant 7 Room C 240	Eija Huotari PhD Kaija Arhio PhD Marja-Liisa Kaakko MSc	15/5
24.4.2 017	15.45 – 16 :00	Testing	STAGE III OF METHOD 3 : Start Up: Summing up the results concerning flipped classroom; filling in the questionnaire 3 concerning an increase in transversal competences after using all three methods	15 min	Centria UAS YLIVIESKA Vierimaant 7 Room C 240	Eija Huotari PhD Kaija Arhio PhD Marja-Liisa Kaakko MSc	15/15

Testing group data: **Faculty: Management Engineering, Field of study: Technology, Year: 3, Sem. 5, 3rd-cycle studies.**

The number of students taking part in the research was 15, in the entire research process. All the questionnaires were filled in by 15 students. Data analysis comprised results provided by 15 students, which is compliant with "Instruction for preparing and testing models of processes of developing transversal skills as part of practical training" where the minimum number of students is 15.

3. Results of research concerning an increase in particular transversal competences (results Questionnaire appendix 2) for n=15. (students)

Entrepreneurship – indicators		M1 – results average	M2 – results average	M3 – results average	Average of an increase in component competences after all the methods	Open question
1.1.	Ability to effect and accept changes	2,93	3,20	3,13	3,09	
1.2.	Ability to perform a critical evaluation of entrepreneurial opportunities	2,71	3,20	3,40	3,10	
1.3.	Ability to plan creative solutions	2,93	3,40	3,40	3,24	
1.4.	Ability to come up with new, creative solutions	2,79	3,47	3,53	3,26	
1.5.	Ability to undertake rational risk	2,50	2,87	3,07	2,81	
1.6.	Ability to change ideas into specific activity	2,86	3,20	3,27	3,11	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		2,79	3,22	3,30		
Creativity – indicators		M1 – results average	M2 – results average	M3 – results average	Average of an increase in component competences after all the methods	Open question
2.1.	Ability to make use of creative thinking	2,80	3,40	3,07	3,09	

2.2.	Ability to come up with original and useful solutions to problems	3,00	3,13	3,40	3,18	
2.3.	Ability to develop new concepts or new associations with existing ideas and concepts	2,87	3,27	3,53	3,22	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		2,89	3,27	3,33		
	Teamwork – indicators	M1 – results average	M2 – results average	M3 – results average	Average of an increase in component competences after all the methods	Open question
3.1.	Ability to be actively engaged in tasks	3,20	3,67	3,27	3,38	
3.2.	Ability to create nice atmosphere and positive relations	3,47	3,33	3,27	3,36	
3.3.	Ability to solve conflicts in a group	2,80	3,27	3,13	3,07	
3.4.	Ability to motivate others to act	3,00	3,67	3,07	3,25	
3.5.	Ability to encourage others to achieve a mutual goal	3,07	3,36	3,33	3,25	
3.6.	Ability to respect norms and principles of a group and other people's opinion and ideas	3,47	3,40	3,13	3,33	
3.7.	Ability to convey information in an effective way	3,00	3,27	3,27	3,18	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		3,14	3,42	3,21		
	Communicativeness – indicators	M1 – results average	M2 – results average	M3 – results average	Average of an increase in component competences after all the methods	Open question
4.1.	Ability to convey and receive information in a reliable way	2,80	3,47	3,20	3,16	

4.2.	Ability to establish and maintain appropriate interpersonal relations	3,07	3,27	3,20	3,18
4.3.	Ability to express and interpret notions, thoughts and opinions in speaking and writing in a clear and understandable way	2,93	3,60	3,13	3,22
4.4.	Ability to interpret nonverbal communication	2,90	3,86	3,50	3,42
4.5.	Ability to listen and respect other people's opinion	3,27	3,67	3,21	3,38
4.6.	Ability to negotiate	3,33	3,38	3,21	3,31
4.7.	Ability to express and defend one's own opinion	3,13	3,00	3,21	3,11
4.8.	Ability to make self-presentation and speak in public	2,80	2,89	2,79	2,83
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		2,03	3,39	3,18	

W1.1. – W4.8. – *competence indicators*

For teamwork and communicativeness competences results are calculated in the same way as in case of the remaining competences.

4. Results from Questionnaire appendix 3 - for assessment of the evolution of transversal skills level of the students in practical teaching process (the level of possessed skills)

	Average result questionnaire 3 (average level of a skill prior to testing)	Average result questionnaire 3 (average level of a skill after to testing)
Entrepreneurship	3,51	3,28
Creativity	3,73	3,09
Teamwork	3,56	3,04
Communicativeness	3,78	3,25

5. Results from Questionnaire appendix 2 - to measure the dynamics of changes in the evolution of acquired transversal competences (degree of change)

	Method I - Average result of an increase in a skill questionnaire 2	Method II - Average result of an increase in a skill questionnaire 2	Method III - Average result of an increase in a skill questionnaire 2
Entrepreneurship	2,60	3,22	3,30
Creativity	2,89	3,27	3,33
Teamwork	3,14	3,39	3,21
Communicativeness	2,91	2,46	2,99

6. Results of research concerning an increase in the levels of transversal competences of particular students (n=15)

Student No.	M1					M2					M3				
	method 1 Entrepreneurship (average)	method 1 Creativity (average)	method 1 Teamwork (average)	method 1 Communicativeness (average)	AVERAGE AFTER Method 1	Method 2 Entrepreneurship (average)	Method 2 Creativity (average)	Method 2 Teamwork (average)	Method 2 Communicativeness (average)	AVERAGE AFTER Method 2	Method 3 Entrepreneurship (average)	Method 3 Creativity (average)	Method 3 Teamwork (average)	Method 3 Communicativeness (average)	AVERAGE AFTER Method 3
1	3,50	3,00	4,00	3,63	3,63	2,50	3,00	3,00	3,14	2,91	2,50	2,33	2,29	2,43	2,39
2	2,33	2,67	3,43	3,38	3,04	3,00	3,00	3,00	3,00	3,00	2,33	2,00	2,43	2,29	2,30
3		3,33	3,71	4,00	3,78	3,17	3,67	3,86	3,75	3,63	2,17	2,67	2,57	2,33	2,42
4	2,83	3,00	2,71	2,88	2,83	3,67	4,33	4,43	4,75	4,33	4,17	4,33	4,00	4,13	4,13
5	4,00	4,00	4,14	4,00	4,04	3,33	3,67	3,86	3,75	3,67	4,00	4,33	4,00	3,88	4,00
6	1,33	2,00	3,00	2,71	2,35	2,83	2,67	3,14	3,00	2,96	3,50	3,33	3,57	3,38	3,46
7	1,83	2,33	2,00	2,50	2,17	2,83	2,67	3,00	3,88	3,21	4,17	4,67	3,71	3,63	3,92
8	3,00	3,00	3,00	3,00	3,00	3,00	2,67	3,43	2,71	3,00	2,83	3,00	2,14	2,50	2,54
9	3,17	3,67	3,71	3,71	3,57	4,33	4,67	4,33	5,00	4,50	4,00	4,00	4,00	3,88	3,96
10	2,50	2,00	2,57	2,57	2,48	2,50	2,67	3,00	3,00	2,79	2,67	3,00	3,43	2,88	3,00

11	2,17	2,67	2,43	2,43	2,39	4,00	3,67	3,57	3,67	3,74	3,67	3,67	3,43	2,88	3,33
12	4,00	3,33	3,86	3,50	3,71	4,50	3,33	4,57	4,67	4,37	4,00	3,67	3,71	3,88	3,83
13	3,67	3,33	3,71	3,50	3,58	2,17	2,33	1,57	1,29	1,74	2,83	2,67	2,86	2,63	2,75
14	3,67	4,00	3,86	2,88	3,50	3,50	3,67	3,71	3,67	3,63	4,17	4,00	3,71	3,75	3,88
15	1,00	1,00	1,00	0,75	0,92	3,00	3,00	3,00	2,67	2,95	2,50	2,33	2,29	2,50	2,42

EXPLANATORY NOTES:

n – number of students who participated in the entire process and filled in all the questionnaires

W1.1. : W4.8.- numbers of consecutive competence indicators

For methods 2 and 3 results are calculated in the same way as in case of method 1.

7. Information about testing

Please fill in the the table.

	Method I	Method II	Method III
Testing start day	20.2.2017	3.4.2017	24.4.2017
Testing start time	13 :00	13 :00	13 :00
Testing end day	27.2.2017	3.4.2017	24.4.2017
Testing end time	15.45	15 :45	16 :00
Duration of testing (in minutes)	210	120	180
Number of meetings with students	2	1	1
Number of dean's groups	3	1	3
Number of test groups during a meeting	3	3	3
Average size of test groups during a meeting	5	5	5

Number of instructors	1	1	3
Number of courses/subjects where methods were tested	1	1	1
Type of activity	presentations	lessons	presentations at the seminar
Language of communication	Finnish		
Nationality of testers	Finnish		
Hofstede comparing cultures https://www.hofstede-insights.com/country-comparison/			
Power distance	<p style="text-align: center;">33</p> <p>Being independent, hierarchy for convenience only, equal rights, superiors accessible, coaching leader, management facilitates and empowers</p>		
Individualism	<p style="text-align: center;">63</p> <p>Finland, with a score of 63 is an Individualist society. This means there is a high preference for a loosely-knit social framework in which individuals are expected to take care of themselves and their immediate families only.</p>		
Masculinity	<p style="text-align: center;">26</p> <p>Finland scores 26 on this dimension and is thus considered a Feminine society. In Feminine countries the focus is on "working in order to live", managers strive for consensus, people value equality, solidarity and quality in their working lives. Conflicts are resolved by compromise and negotiation. Incentives such as free time and flexibility are favoured. Focus is on well-being, status is not shown. An effective manager is a supportive one, and decision making is achieved through involvement.</p>		
Uncertainty Avoidance	<p style="text-align: center;">59</p> <p>Finland scores 59 on this dimension and thus has a high preference for avoiding uncertainty. Countries exhibiting high Uncertainty Avoidance maintain rigid codes of belief and behaviour and are intolerant of unorthodox behaviour and ideas. In these cultures there is an emotional need for rules (even if the rules never seem to work), time is money, people have an inner urge to be busy and work hard, precision and punctuality are the norm, innovation may be resisted and security is an important element in individual motivation.</p>		
Long Term Orientation	<p style="text-align: center;">38</p> <p>With a low score of 38, Finnish culture can be classified as normative. People in such societies have a strong concern with establishing the absolute Truth; they are normative in their thinking. They exhibit great respect for traditions, a relatively small propensity to save for the future, and a focus on achieving quick results.</p>		
Indulgence	<p style="text-align: center;">57</p>		

indicates that Finland is an indulgent country. People are enjoying life and having fun. They possess a positive attitude and have a tendency towards optimism. They place a higher degree of importance on leisure time, act as they please and spend money as they wish.

8. Students' assessment regarding the tested process as beneficial for their professional development.

Assessment indicator	Numbers of students	Percentage of students
0 – no impact on the development	0	0,00 %
1 – beneficial in a very small extent	1	6,67 %
2 – beneficial in a small extent	1	6,67 %
3 - beneficial in a medium extent	8	53,33 %
4 - beneficial in a high extent	3	20,00 %
5 - beneficial in a very high extent	2	13,33 %

9. Description of experiments conducted by researchers testing process 2

Please write your remarks, observations noted by individuals conducting research.

Ny Start up method in Finland is a practical hands on learning model for entrepreneurship, testing students' ideas in practice and improving working life skills. NY Start Up company is a motivating learning environment for the students and they can work many months developing their own idea. This will convert the normal school solely the learning goals to a real-life experience. The method focuses on learning by doing. A student company is a practice company founded by students during their start up –studies. Students' companies operate on real money, selling products and services to their real customers. That changes students from passive learners to active and entrepreneurial minded future makers. The company functioned for 7 months as a test lab for student's ideas, provided possibility to put working life skills into practice, and gave students a picture of what it is like to work in a small private company as an owner or CEO.

Therefore, when we had those testing and questionnaires with these students, they were busy start up owners making business with customers and running the company. I think that is why all these methods were not successful with them. The flipped classroom didn't meet a big excitement from the students. And at the end of the start up testing might also had that problems: they were too tired.

I think that it would have been better to have other groups testing, too. Not the same group all these 5 questionnaires. I have used flipped classroom –method also with another students group and they liked it a lot, and were enthusiastic about learning with flipped classroom. And also the pedagogical drama with international students succeeded very well.

3.4. APPENDIX NO. 4

Development of the results of testing process 3 (UM FEB)

1. Process 3 presentation

The figure 1 presents the process of testing the process 3.

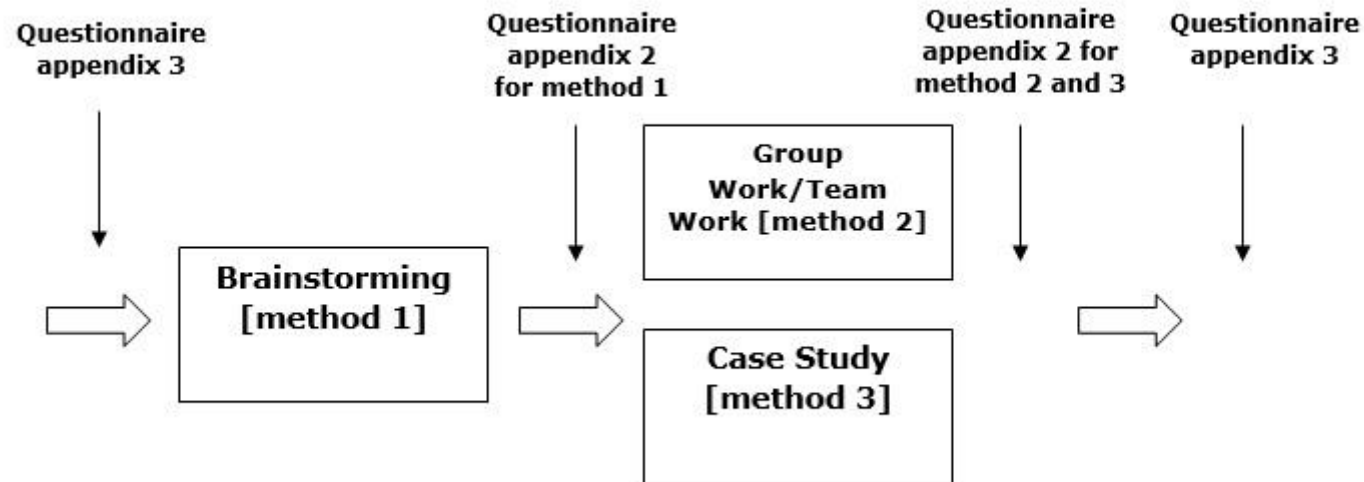


Figure 1. Application of practical teaching methods in process 3 – UM FEB.

Questionnaire appendix No. 2 - to measure the dynamics of changes in the evolution of acquired transversal competences (degree of change)

Questionnaire appendix No. 3 - for assessment of the evolution of transversal skills level of the students in practical teaching process (the level of possessed skills)

2. Schedule of testing process 3 testing (UM FEB)

Date	Time	Subject	Process stage	Duration	Place	Testers	Number of participants in classes/number of filled-in questionnaires
6. 3. 2017	8:00–9:30	Management of small and medium-sized enterprises	<p>Brainstorming Meeting 1 (M1) (90 minutes): Introduction to the Erasmus+ project, testing process, and the competencies to be developed. A questionnaire: Evaluation of the level of transversal competences at the beginning of testing process (app. 3 to the instructions, part one). Lecture on the topic that is subject of the Brainstorming Meeting 2.</p>	90 minutes (2 class hours)	University of Maribor, Faculty of Economics and Business Razlagova street 14 2000 Maribor, Slovenia (Computer classroom R-01)	Instructor: Assist. Prof. Dr. Tjaša Štrukelj	17/17 (level of transversal competences at the beginning of testing process)
13. 3. 2017	8:00–11:15	Management of small and medium-sized enterprises	<p>Brainstorming – Meeting 2 (3 hours; and 15 minutes pause): Introducing the Brainstorming method to be applied, an entrepreneur from practice, and the problem from practice. Dividing students into groups. The Brainstorming method using in practice. Summing up the results concerning solving problems. Filling in a questionnaire after using method I: The pace of an increase in transversal competences (appendix 2 to the instruction) (Brainstorming method).</p>	3 hours and 15 minutes pause (4 class hours and 15 minutes pause)	University of Maribor, Faculty of Economics and Business Razlagova street 14 2000 Maribor, Slovenia (Computer classroom R-01)	Instructor: Assist. Prof. Dr. Tjaša Štrukelj Entrepreneur: M. Sc. Vesna Kovačič	17/17
20. 3. 2017	8:00–9:55	Management of small and medium-sized enterprises	<p>Teamwork and Case study – Meeting 1 (45 minutes Teamwork and 1 hour and 10 minutes Case study; together 1 hour and 55 minutes): Explanation of the Case study method and Teamwork method, introducing the competencies to be developed in the process with the Case study method and Teamwork method. Lecture on the topic that is subject of the Teamwork and Case study Meeting 2.</p>	1 hour and 55 minutes (2 class hours and 25 minutes)	University of Maribor, Faculty of Economics and Business Razlagova street 14 2000 Maribor, Slovenia (Computer classroom R-01)	Instructor: Assist. Prof. Dr. Tjaša Štrukelj	17/NA

27. 3. 2017	8:00–10:35	Management of small and medium-sized enterprises	<p>Teamwork and Case study – Meeting 2 (2 hours and 35 minutes for both methods): Case introduction, discussion on case assignment, issue and analysis needed identification, a small group (teamwork) discussion, a large group (group work) discussion. Summing up the results concerning solving problems. A questionnaire: The pace of an increase in transversal competences (appendix 2 to the instruction) (Case study method; Teamwork method). A questionnaire: Evaluation of the level of transversal competences after the completion of the tested process (appendix 3 to the instruction, part two). Summarizing how all three methods contribute to the improvement of all four transversal competences.</p>	2 hours and 35 minutes (3 class hours and 20 minutes)	University of Maribor, Faculty of Economics and Business Razlagova street 14 2000 Maribor, Slovenia (Computer classroom R-01)	Instructor: Assist. Prof. Dr. Tjaša Štrukelj	17/17 (Case study method) 17/17 (Teamwork method) 17/17 (level of transversal competences at the end of testing process)
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Testing group data: **Faculty:** University of Maribor, Faculty of Economics and Business. **Field of study:** Management of small and medium-sized enterprises, **Year:** 3rd year of the first cycle study program. **Semester:** 6th semester 1st-cycle studies.

The number of students taking part in the research was 17, out of whom 17 took part in the entire research process. 17 students filled in all the questionnaires. No data was rejected (there was no student who did not participate in the full research process, e.g. filled in questionnaire No. 2 and not No. 3, or that participated only in one or two testing stages). Data analysis comprised results provided by 17 students, which is compliant with "Instruction for preparing and testing models of processes of developing transversal skills as part of practical training" where the minimum number of students is 15.

3. Results of research concerning an increase in particular transversal competences (results Questionnaire appendix 2) for n= 17(students)

Entrepreneurship – indicators		Brainstorming - average	Case study - average	Team work - average	Average of an increase in component competences after all the methods	Open question
1.1.	Ability to effect and accept changes	4.18	3.35	3.47	3.67	None.
1.2.	Ability to perform a critical evaluation of entrepreneurial opportunities	3.94	3.00	3.29	3.41	
1.3.	Ability to plan creative solutions	3.94	3.53	3.59	3.69	
1.4.	Ability to come up with new, creative solutions	3.82	3.24	3.71	3.59	
1.5.	Ability to undertake rational risk	3.71	3.24	3.47	3.47	
1.6.	Ability to change ideas into specific activity	3.76	2.94	3.35	3.35	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		3.89	3.22	3.48		
Creativity – indicators		Brainstorming - average	Case study - average	Team work - average	Average of an increase in component competences after all the methods	Open question
2.1.	Ability to make use of creative thinking	3.94	3.59	3.76	3.76	None.
2.2.	Ability to come up with original and useful solutions to problems	4.12	3.24	3.71	3.69	
2.3.	Ability to develop new concepts or new associations with existing ideas and concepts	3.94	3.53	3.76	3.75	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		4.00	3.45	3.75		

	Teamwork – indicators	Brainstorming - average	Case study - average	Team work - average	Average of an increase in component competences after all the methods	Open question
3.1.	Ability to be actively engaged in tasks	4.12	3.88	4.12	4.04	None.
3.2.	Ability to create nice atmosphere and positive relations	4.06	3.82	4.12	4.00	
3.3.	Ability to solve conflicts in a group	3.65	3.35	3.35	3.45	
3.4.	Ability to motivate others to act	3.82	3.71	3.82	3.78	
3.5.	Ability to encourage others to achieve a mutual goal	3.71	3.65	3.71	3.69	
3.6.	Ability to respect norms and principles of a group and other people's opinion and ideas	3.94	3.88	3.88	3.90	
3.7.	Ability to convey information in an effective way	3.94	3.71	3.53	3.73	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		3.89	3.71	3.79		
	Communicativeness – indicators	Brainstorming - average	Case study - average	Team work - average	Average of an increase in component competences after all the methods	Open question
4.1.	Ability to convey and receive information in a reliable way	3.94	3.47	3.47	3.63	None.
4.2.	Ability to establish and maintain appropriate interpersonal relations	4.00	3.71	3.94	3.88	
4.3.	Ability to express and interpret notions, thoughts and opinions in speaking and writing in a clear and understandable way	3.88	3.35	3.18	3.47	
4.4.	Ability to interpret nonverbal communication	3.59	3.29	3.29	3.39	

4.5.	Ability to listen and respect other people's opinion	4.18	3.76	3.71	3.88
4.6.	Ability to negotiate	3.65	3.53	3.65	3.61
4.7.	Ability to express and defend one's own opinion	3.65	3.65	3.71	3.67
4.8.	Ability to make self-presentation and speak in public	3.59	3.47	3.65	3.57
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		3.81	3.53	3.57	

4. Results from Questionnaire appendix 3 - for assessment of the evolution of transversal skills level of the students in practical teaching process (the level of possessed skills)

	Average result questionnaire 3 (average level of a skill prior to testing)	Average result questionnaire 3 (average level of a skill after testing)
Entrepreneurship	3.08	3.66
Creativity	2.98	3.53
Teamwork	3.41	4.10
Communicativeness	3.30	3.93

5. Results from Questionnaire appendix 2 - to measure the dynamics of changes in the evolution of acquired transversal competences (degree of change)

	Method I (brainstorming) - Average result of an increase in a skill questionnaire 2	Method II (case study) - Average result of an increase in a skill questionnaire 2	Method III (team work) - Average result of an increase in a skill questionnaire 2
Entrepreneurship	3.89	3.22	3.48
Creativity	4.00	3.45	3.75
Teamwork	3.89	3.71	3.79
Communicativeness	3.81	3.53	3.57

6. Results of research concerning an increase in the levels of transversal competences of particular students (n=17)

Student No.	M1 - brainstorming					M2 - case study					M3 - team work				
	method 1 Entrepreneurship (average)	method 1 Creativity (average)	method 1 Teamwork (average)	method 1 Communicativeness (average)	AVERAGE AFTER Method 1	Method 2 Entrepreneurship (average)	Method 2 Creativity (average)	Method 2 Teamwork (average)	Method 2 Communicativeness (average)	AVERAGE AFTER Method 2	Method 3 Entrepreneurship (average)	Method 3 Creativity (average)	Method 3 Teamwork (average)	Method 3 Communicativeness (average)	AVERAGE AFTER Method 3
student 1	3.83	5.00	4.00	4.50	4.33	4.00	4.33	4.57	3.63	4.13	4.17	4.67	4.29	3.50	4.16
student 2	4.17	4.67	4.43	4.50	4.44	4.00	4.33	4.71	4.38	4.36	3.83	4.33	4.57	4.50	4.31
student 3	1.50	1.67	1.71	1.25	1.53	0.67	0.67	0.57	0.63	0.64	0.33	0.33	0.29	0.38	0.33
student 4	4.00	4.00	4.43	3.63	4.02	3.50	3.67	3.71	3.88	3.69	4.00	4.00	4.00	3.50	3.88
student 5	4.17	4.33	4.43	4.38	4.33	2.83	3.00	4.29	3.88	3.50	2.83	3.67	4.57	4.13	3.80
student 6	4.67	4.00	4.29	4.00	4.24	2.33	4.33	4.57	4.50	3.93	2.33	4.33	4.57	4.50	3.93
student 7	3.67	3.67	4.57	3.88	3.95	3.50	3.33	3.71	3.63	3.54	3.50	3.00	3.71	3.63	3.46
student 8	4.50	4.67	4.29	4.75	4.55	4.50	4.67	4.29	4.75	4.55	4.50	4.67	4.29	4.75	4.55
student 9	4.50	4.67	4.86	4.00	4.51	4.00	3.33	5.00	4.88	4.30	4.50	4.33	5.00	4.63	4.62
student 10	3.83	4.00	4.43	3.63	3.97	3.00	3.33	4.00	3.25	3.40	4.00	4.33	4.57	3.75	4.16
student 11	4.17	4.33	4.43	4.63	4.39	2.67	2.67	2.71	2.25	2.58	3.83	3.67	3.71	3.25	3.62
student 12	3.00	2.67	2.71	2.50	2.72	3.00	3.00	2.57	3.00	2.89	3.00	3.00	2.57	3.00	2.89
student 13	4.33	4.67	4.14	4.50	4.41	3.67	3.33	4.43	4.25	3.92	3.67	3.33	4.14	3.88	3.76
student 14	4.50	4.33	4.57	4.13	4.38	3.67	3.67	4.00	3.50	3.71	3.67	3.67	4.00	3.50	3.71
student 15	3.83	4.00	3.71	4.63	4.04	4.00	4.67	4.57	4.63	4.47	4.00	4.00	4.14	4.50	4.16
student 16	3.33	3.67	1.00	1.88	2.47	2.83	3.00	1.29	1.25	2.09	3.50	4.33	1.71	1.38	2.73
student 17	4.17	3.67	4.14	4.00	4.00	3.17	3.33	4.14	3.75	3.60	3.50	4.00	4.29	4.00	3.95
	3.89	4.00	3.89	3.81		3.22	3.45	3.71	3.53		3.48	3.75	3.79	3.57	

7. Information about testing

	Method I (brainstorming)	Method II (case study)	Method III (team work)
Testing start day	6. 3. 2017	20. 3. 2017	20. 3. 2017
Testing start time	8 :00	8 :00	8 :00
Testing end day	13. 3. 2017	27. 3. 2017	27. 3. 2017
Testing end time	11:15	10:35	10:35
Duration of testing (in minutes)	285 minutes	270 minutes (for both Method II and Method III)	270 minutes (for both Method II and Method III)
Number of meetings with students	2	2	2
Number of dean's groups	1	1	1
Number of test groups during a meeting	3	3	3
Average size of test groups during a meeting	5,67 (5, 6 and 6)	5,67 (5, 6 and 6)	5,67 (5, 6 and 6)
Number of instructors	1	1	1
Number of courses/subjects where methods were tested	1	1	1
Type of activity	Management of small and medium-sized enterprises (the topic „Success factors in the start-up and development of the enterprise“)	Management of small and medium-sized enterprises (the topic „Particularities of developmental cycle and life cycle of small and medium-sized enterprises“)	Management of small and medium-sized enterprises (the topic „Particularities of developmental cycle and life cycle of small and medium-sized enterprises“)
Language of communication	Slovenian language		
Nationality of testers	Slovenians		

Hofstede comparing cultures https://www.hofstede-insights.com/country-comparison/	
Power distance	71
Individualism	27
Masculinity	19
Uncertainty Avoidance	88
Long Term Orientation	49
Indulgence	48

8. Students' assessment regarding the tested process as beneficial for their professional development.

Assessment indicator	Numbers of students	Percentage of students
0 – no impact on the development	0	-
1 – beneficial in a very small extent	0	-
2 – beneficial in a small extent	0	-
3 – beneficial in a medium extent	1	6%
4 – beneficial in a high extent	9	53%
5 – beneficial in a very high extent	7	41%

9. Description of experiments conducted by researchers testing process 3 (UM FEB)

The selected practical teaching methods (Brainstorming, Teamwork and Case study) and the process of developing transversal skills as part of practical training is beneficial to the professional development of the students.

The indicator of beneficial to the student's professional development would be at higher level if during the testing period the meetings no. 2 (i.e., within brainstorming, case study and team work) of the process, as are designed, would be repeated at least 2 times. So the students would use the same practical teaching methods at least twice, each time solving different practical problems. The survey in App. 2 for the method should be carried out after the last time of the method used. This is valid also for other processes developed by other partners of the Erasmus+ project.

3.5. APPENDIX NO. 5

Development of the results of testing process 3 (WUE)

1. Process 3 presentation - WUE

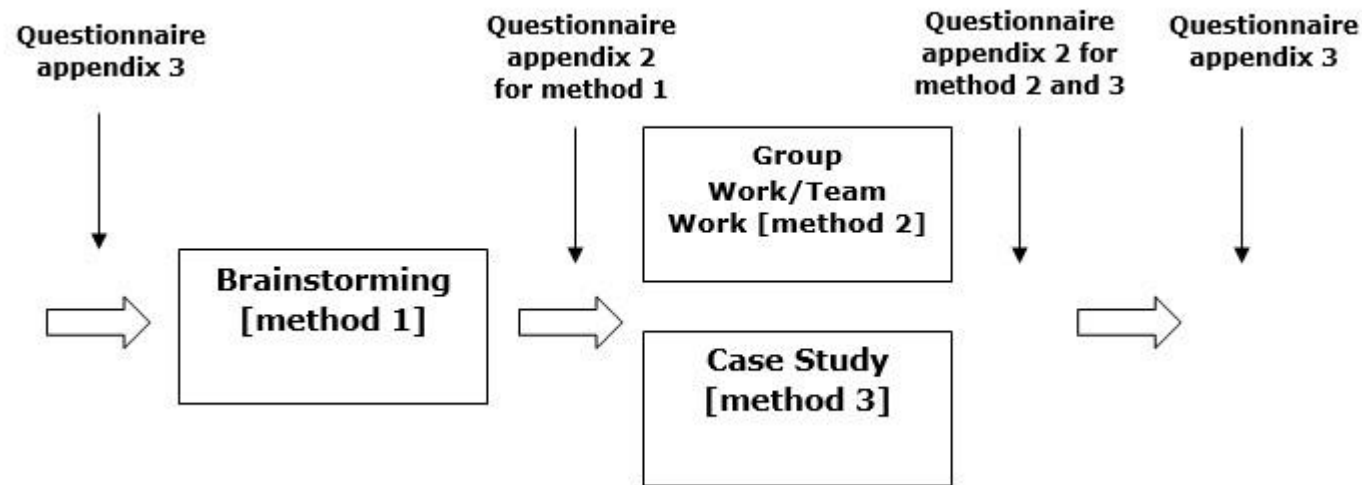


Figure 1. Application of practical teaching methods in process 3 - UM FEB.

Questionnaire appendix No. 2 - to measure the dynamics of changes in the evolution of acquired transversal competences (degree of change)

Questionnaire appendix No. 3 - for assessment of the evolution of transversal skills level of the students in practical teaching process (the level of possessed skills)

Note: concerns the appendix to the instruction developed in task 5
https://drive.google.com/drive/folders/0B8IR3KLVVT_sQkUzdFJlb3p6dkk

2. Schedule of testing process 3

Date	Time	Subject	Process stage	Duration	Place	Testers	Number of participants in classes/number of filled-in questionnaires
05.10.2017	12.45-13.30	Knowledge Management	STAGE I OF METHOD I - Introduction to the project and process	45 min	Kamienna 57/59 (CKU) , Wrocław University of Economics, tutorial room	instructor: M. Sobińska, PhD	21/NA
12.10.2017	8.15-9.00	Knowledge Management	STAGE II OF METHOD I - Filling in the questionnaire concerning the level of transversal competences at the beginning of testing; characteristics of method I - Brainstorming ; conducting classes using brainstorming for seeking motives of knowledge management popularity.	45 min	Kamienna 57/59 (CKU) , Wrocław University of Economics, tutorial room	instructor: M. Sobińska, PhD	21/15
12.10.2017	9.00-9.45	Knowledge Management	STAGE III OF METHOD I - Summing up the results concerning solving problems; filling in the questionnaire concerning an increase in transversal competences after using method I Brainstorming	45 min	Kamienna 57/59 (CKU) , Wrocław University of Economics, tutorial room	instructor: M. Sobińska, PhD	21/15
19.10.2017	12.00-12.15	Knowledge Management	STAGE I OF METHOD II - Introduction to method II , discussing the idea of Teamwork , dividing students into 3 groups, presentation of problems concerning barriers in knowledge sharing at the university	15 min	Kamienna 57/59 (CKU) , Wrocław University of Economics, tutorial room	instructor: M. Sobińska, PhD	18/15
19.10.2017	12.15-12.45	Knowledge Management	STAGE II OF METHOD II – carrying classes using team work: discussions within the teams, general discussion – introducing ideas concerning the stated problem, assessment and evaluation of teams; fulfilling the questionnaire concerning an increase in transversal competences using method II Teamwork	30 min	Kamienna 57/59 (CKU) , Wrocław University of Economics, tutorial room	instructor: M. Sobińska, PhD	18/15

19.10.2017	12.45-13.15	Knowledge Management	STAGE I OF METHOD III – Characteristics of method III – Case study ; conducting classes using method III by the same teams in a frame of parallel testing of the case study; description/reading of real "business life situation"; discussion of the main aspects of the case/reading; stating questions; first - carrying out discussions in small groups and then following it by the whole group discussion.	30 min	Kamienna 57/59 (CKU) , Wrocław University of Economics, tutorial room	instructor: M. Sobińska, PhD	18/15
19.10.2017	13.15-13.30	Knowledge Management	STAGE II OF METHOD III – Summarizing the case (teacher); filling in the questionnaire concerning an increase in transversal competences after using method III Case study . Filling in the questionnaire concerning an increase in transversal competences after the entire testing process	15 min	Kamienna 57/59 (CKU) , Wrocław University of Economics, tutorial room	instructor: M. Sobińska, PhD	18/15

Testing group data: **Faculty:** Management, Computer Science and Finance, **Field of study:** Business Informatics, **Year:** 3, **Sem.** 5 first-cycle studies.

The number of students taking part in the research was 21. (*please indicate the number of student participants*), out of whom 18 (*please indicate the number of students taking part in the entire research process*) took part in the entire research process. All the questionnaires were filled in by 15 (*please indicate the number of students who filled in the questionnaire*) students. Data analysis comprised results provided by 15 students, which is compliant with "Instruction for preparing and testing models of processes of developing transversal skills as part of practical training" where the minimum number of students is 15.

3. Results of research concerning an increase in particular transversal competences (results Questionnaire appendix 2) for n=15 (students)

Entrepreneurship – indicators		M1 – results average	M2 – results average	M3 – results average	Average of an increase in component competences after all the methods	Open question
1.1.	Ability to effect and accept changes	2,20	2,27	3,60	2,69	no notes on the board changing the form of

1.2.	Ability to perform a critical evaluation of entrepreneurial opportunities	2,20	2,67	3,60	2,82	classes into a workshop smaller groups and simulations of company activities debate more practical examples
1.3.	Ability to plan creative solutions	2,20	2,67	3,53	2,80	
1.4.	Ability to come up with new, creative solutions	2,13	2,67	3,40	2,73	
1.5.	Ability to undertake rational risk	2,13	2,13	3,53	2,60	
1.6.	Ability to change ideas into specific activity	2,33	2,67	3,60	2,87	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		2,20	2,51	3,54		
	Creativity – indicators	M1 – results average	M2 – results average	M3 – results average	Average of an increase in component competences after all the methods	Open question
2.1.	Ability to make use of creative thinking	2,13	2,80	3,47	2,80	smaller groups and simulations of company activities Justification for selected methods looking for real examples "come in someone's shoes"
2.2.	Ability to come up with original and useful solutions to problems	2,20	3,27	3,33	2,93	
2.3.	Ability to develop new concepts or new associations with existing ideas and concepts	2,53	2,73	3,33	2,86	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		2,29	2,93	3,38		
	Teamwork – indicators	M1 – results average	M2 – results average	M3 – results average	Average of an increase in component competences after all the methods	
3.1.	Ability to be actively engaged in tasks	2,87	3,33	3,40	3,20	probably "yes" due to the rule "It is always chance for
3.2.	Ability to create nice atmosphere and positive relations	3,27	3,60	3,67	3,51	

3.3.	Ability to solve conflicts in a group	2,67	3,33	3,47	3,16	development" choice of a leader and group assesment it depends on people- if they like each other they effectively work together
3.4.	Ability to motivate others to act	2,13	3,53	3,33	3,00	
3.5.	Ability to encourage others to achieve a mutual goal	2,47	3,33	3,47	3,09	
3.6.	Ability to respect norms and principles of a group and other people's opinion and ideas	2,80	3,40	3,93	3,38	
3.7.	Ability to convey information in an effective way	2,73	3,40	3,47	3,20	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		2,70	3,42	3,53		
	Communicativeness – indicators	M1 – results average	M2 – results average	M3 - results average	Average of an increase in component competences after all the methods	Open question
4.1.	Ability to convey and receive information in a reliable way	2,80	3,20	3,40	3,13	justification of the choices by examples
4.2.	Ability to establish and maintain appropriate interpersonal relations	2,73	3,20	3,67	3,20	
4.3.	Ability to express and interpret notions, thoughts and opinions in speaking and writing in a clear and understandbale way	2,60	3,27	3,40	3,09	
4.4.	Ability to interpret nonverbal communication	2,13	3,07	3,33	2,84	
4.5.	Ability to listen and respect other people's opinion	2,53	3,40	3,87	3,27	
4.6.	Ability to negotiate	2,33	3,07	3,67	3,02	
4.7.	Ability to express and defend one's own opinion	2,53	3,40	4,13	3,35	
4.8.	Ability to make self-presentation and speak in public	1,57	2,80	3,80	2,72	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		2,40	3,18	3,66		

W1.1. – W4.8. – competence indicators

For teamwork and communicativeness competences results are calculated in the same way as in case of the remaining competences.

4. Results from Questionnaire appendix 3 - for assessment of the evolution of transversal skills level of the students in practical teaching process (the level of possessed skills)

	Average result questionnaire 3 (average level of a skill prior to testing)	Average result questionnaire 3 (average level of a skill after testing)
Entrepreneurship	3,42	4,36
Creativity	3,18	4,27
Teamwork	3,70	4,49
Communicativeness	3,78	4,48

5. Results from Questionnaire appendix 2 - to measure the dynamics of changes in the evolution of acquired transversal competences (degree of change)

	Method I - Average result of an increase in a skill questionnaire 2	Method II - Average result of an increase in a skill questionnaire 2	Method III - Average result of an increase in a skill questionnaire 2
Entrepreneurship	2,20	2,51	3,54
Creativity	2,29	2,93	3,38
Teamwork	2,70	3,42	3,53
Communicativeness	2,40	3,18	3,66

6. Results of research concerning an increase in the levels of transversal competences of particular students (n=15)

Student No.	M1					M2					M3				
	method 1 Entrepreneurship (average)	method 1 Creativity (average)	method 1 Teamwork (average)	method 1 Communicativeness (average)	AVERAGE AFTER Method 1	Method 2 Entrepreneurship (average)	Method 2 Creativity (average)	Method 2 Teamwork (average)	Method 2 Communicativeness (average)	AVERAGE AFTER Method 2	Method 3 Entrepreneurship (average)	Method 3 Creativity (average)	Method 3 Teamwork (average)	Method 3 Communicativeness (average)	AVERAGE AFTER Method 3
161608	3,50	4,33	4,57	4,13	4,13	4,50	4,67	4,71	4,75	4,66	4,33	4,33	4,29	4,38	4,33
157451	1,00	0,33	1,00	0,75	0,77	1,33	2,67	3,57	2,75	2,58	4,83	4,33	4,71	4,75	4,66
161581	4,83	5,00	4,57	4,38	4,69	5,00	5,00	5,00	5,00	5,00	4,00	3,33	3,71	3,63	3,67
161606	3,17	3,67	1,71	1,75	2,57	3,00	3,00	3,00	3,00	3,00	2,83	2,67	4,14	4,00	3,41
161585	2,33	2,33	1,86	3,25	2,44	2,67	2,67	4,57	4,00	3,48	4,33	4,33	4,29	4,38	4,33
157475	2,67	2,00	2,57	2,50	2,43	3,50	3,33	3,43	3,13	3,35	4,17	3,67	4,29	4,13	4,06
157477	3,33	2,67	3,71	2,63	3,08	4,50	4,67	4,29	4,50	4,49	3,67	4,00	4,71	4,63	4,25
161582	0,00	0,33	0,43	0,38	0,28	0,33	0,67	0,71	0,25	0,49	2,67	2,33	2,29	2,00	2,32
161588	0,50	0,67	2,14	1,88	1,30	0,33	0,67	1,86	1,13	1,00	2,33	2,00	1,00	1,38	1,68
161602	3,00	3,33	5,00	4,86	4,05	4,67	5,00	5,00	4,75	4,85	0,83	1,00	0,71	0,75	0,82
161613	3,50	3,33	4,57	4,25	3,91	3,33	3,67	4,14	3,75	3,72	3,50	3,33	3,14	3,63	3,40
161632	1,33	1,33	2,29	1,38	1,58	0,67	0,67	2,00	1,63	1,24	3,17	3,33	3,00	4,00	3,38
161583	0,17	0,67	1,57	0,25	0,66	0,33	2,00	2,43	2,50	1,82	4,00	3,33	4,00	4,13	3,86
161580	2,83	3,67	3,71	3,50	3,43	2,00	3,33	4,43	3,75	3,38	4,33	4,33	4,29	4,38	4,33
151509	0,83	0,67	0,86	0,63	0,75	1,50	2,00	2,14	2,75	2,10	4,17	4,33	4,43	4,75	4,42
	2,20	2,29	2,70	2,43		2,51	2,93	3,42	3,18		3,54	3,38	3,53	3,66	

EXPLANATORY NOTES:

n – number of students who participated in the entire process and filled in all the questionnaires

W1.1. : W4.8.- numbers of consecutive competence indicators

For methods 2 and 3 results are calculated in the same way as in case of method 1.

7. Information about testing

Please fill in the the table.

	Method I	Method II	Method III
Testing start day	12.10.2017	19.10.2017	19.10.2017
Testing start time	12.45	8.15	9.00
Testing end day	12.10.2017	19.10.2017	19.10.2017
Testing end time	13.30	9.00	9.45
Duration of testing (in minutes)	135	45	45
Number of meetings with students	2	1	1
Number of dean's groups	1	1	1
Number of test groups during a meeting	3	3	3
Average size of test groups during a meeting	20	20	20
Number of instructors	1	1	1
Number of courses/subjects where methods were tested	1	1	1
Type of activity	Knowledge management	Knowledge management	Knowledge management
Language of communication	Polish		
Nationality of testers	Polish		
Hofstede comparing cultures https://www.hofstede-insights.com/country-comparison/			
Power distance	68		
Individualism	60		

Masculinity	64
Uncertainty Avoidance	93
Long Term Orientation	38
Indulgence	29

8. Students' assessment regarding the tested process as beneficial for their professional development.

Assessment indicator	Numbers of students	Percentage of students
0 – no impact on the development	0	-
1 – beneficial in a very small extent	0	-
2 – beneficial in a small extent	1	6,6%
3 – beneficial in a medium extent	4	26,6%
4 – beneficial in a high extent	6	40%
5 – beneficial in a very high extent	4	26,6%

9. Description of experiments conducted by researchers testing process 3

- It was analyzed an increase of each individual student not a group.
- With method 1 and 2/3, students worked in various teams. It was difficult to keep the same groups as the rooms for 1st and 2nd meeting were different and required specific grouping and there was not the same number of students during these three meetings of testing process.
- The students were divided into groups, with the size of 5 to 7.

3.6. APPENDIX NO. 6

Development of the results of testing process 4 (UMB)

1. Process UMB presentation

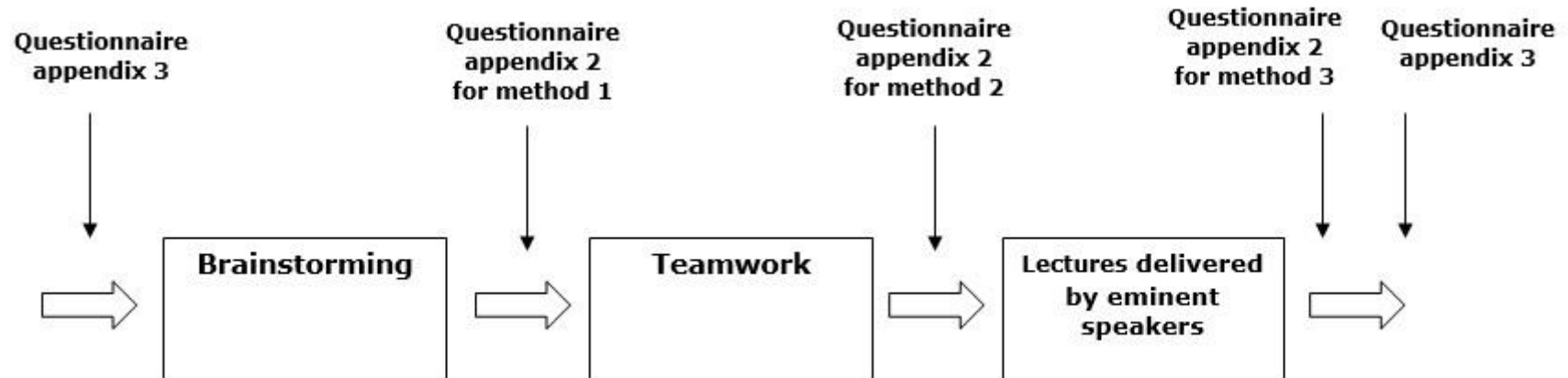


Figure 1. Application of practical teaching methods in process - UMB.

Questionnaire appendix 2 - to measure the dynamics of changes in the evolution of acquired transversal competences (degree of change)

Questionnaire appendix 3 - for assessment of the evolution of transversal skills level of the students in practical teaching process (the level of possessed skills)

2. Schedule of conducting process testing 4 (UMB)

Date	Time	Subject	Process stage	Duration	Place	Testers	Number of participants in classes / number of filled-in questionnaires
21.02.2017	9.05-10.25	Tourism management and marketing	STAGE I OF METHOD I- Introduction to the project and process	40 min	Tajovskeho 10, Faculty of Economics, Matej Bel University, lecture room T10 P 219	instructor: V. Marakova;	37/NA
22.02.17	9:05 - 12:00		STAGE II OF METHOD I- Filling in the questionnaire concerning the level of transversal competences at the beginning of testing; characteristics of method I - Brainstorming ; dividing students into groups; running classes using brainstorming.	80 min	Tajovskeho 10, Faculty of Economics, Matej Bel University, tutorial room T10 P 7	instructor: V. Marakova R.Marčekova	35/35
01.03.17	09:05 - 12:00		STAGE III OF METHOD I- Summing up the results concerning solving problems (identification the most valuable and critical outcomes, argumentation pros and cons with regards of proposal feasibility); filling in the questionnaire concerning an increase in transversal competences after using method I brainstorming	80 min	Tajovskeho 10, Faculty of Economics, Matej Bel University, tutorial room T10 P 7	instructor: V. Marakova R.Marčekova	35/35
08.03.17	09:05 - 12:00		STAGE I OF METHOD II- Introduction to method II , discussing the idea - Teamwork , division of groups into mix sub-groups, presentation of problems concerning the outcomes of brainstorming, work with ICT. Each sub-group was asked to develop action plan, divide competences and tasks, implementation of tasks. Discussion, communication, data search in the sub-groups (3-4 members).	80 min	Tajovskeho 10, Faculty of Economics, Matej Bel University Computer lab T10 P 114	instructor: V. Marakova R.Marčekova	35/NA

22.03.17	09:05 - 12:00		STAGE II OF METHOD II – Conducting classes using teamwork, presenting solutions prepared by students, summing up students' solutions, choosing the best solution, filling in the questionnaire concerning an increase in transversal competences using method II teamwork	80 min	Tajovskeho 10, Faculty of Economics, Matej Bel University, tutorial room T10/ P 7	Representative of entrepreneurs in the region	35/35
20.03.17	10:40-12:00		STAGE I OF METHOD III – Characteristics of method III – Lecture delivered by eminent speaker ; conducting classes using method III. The topic of the lecture focused on practical aspects of regional management in tourism. The guest lecture was concluded by the fruitful discussion of students	80 min	Tajovskeho 10, Faculty of Economics, Matej Bel University Lecture room T10/P115	instructor: V. Marakova R.Marčekova Guest : Director of regional DMO	35/NA
28.03.17	9:05 - 10:25		STAGE II OF METHOD III – Summing up the results; filling in the questionnaire concerning an increase in transversal competences after using method III Lecture delivered by eminent speaker . The topic of the lecture was focused on the tax policy in tourism industry. Filling in the questionnaire concerning an increase in transversal competences after the entire testing process	80 min	Tajovskeho 10, Faculty of Economics, Matej Bel University Lecture room T10/P 219	instructor: V. Marakova R.Marčekova Guest : IT specialist on public authority office	35/35

Testing group data: **Faculty:** Economics , **Field of study:** Tourism Master Program, **Year:** 1, **Sem.** 2, Second-cycle studies

The research comprised 36 students, out of whom 35 took part in the entire research process. All the questionnaires were filled in by 35 students. Data that was rejected was the one provided by students who did not participate in the entire research process, e.g. filled in questionnaire 2 and not 3, or they participated in one or two testing stages. Data analysis comprised results provided by 35 students, which is compliant with "Instruction for preparing and testing models of processes of developing transversal skills as part of practical training" where the minimum number of students is 11, respectively 12.

3. Results of research concerning an increase in particular transversal competences (results Questionnaire appendix no. 2) for n=11/12 (students)

	Entrepreneurship – indicators	brainstorming - average	teamwork - average	Lecture delivered by eminent speaker - average	Average of an increase in component competences after all the methods	Open question
1.1.	Ability to effect and accept changes	2.74	3.43	2.69	2.95	yes, via case studies and different situation from practice, via case studies and different situation from practice, practice; via creating fictive business environment and the to implement functioning of entrepreneurship, to solve possible problems or situations.
1.2.	Ability to perform a critical evaluation of entrepreneurial opportunities	2.94	3.46	2.94	3.11	
1.3.	Ability to plan creative solutions	3.00	3.66	2.77	3.14	
1.4.	Ability to come up with new, creative solutions	2.77	3.69	2.83	3.09	
1.5.	Ability to undertake rational risk	2.97	3.66	3.29	3.31	
1.6.	Ability to change ideas into specific activity	2.86	3.74	3.00	3.2	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		2.881	3.6048	2.919		
	Creativity – indicators	brainstorming - average	teamwork - average	Lecture delivered by eminent speaker - average	Average of an increase in component competences after all the methods	Open question
2.1.	Ability to make use of creative thinking	2.74	3.66	3.20	3.2	to create something, like posters etc. for development of creativity; to dedicate more seminars to brainstorming instead of lectures; increasing creativity via creative industries
2.2.	Ability to come up with original and useful solutions to problems	2.91	3.57	3.14	3.21	
2.3.	Ability to develop new concepts or new associations with existing ideas and concepts	2.91	3.71	3.23	3.28	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		2.86	3.65	3.195		

	Teamwork -indicators	brainstorming - average	teamwork - average	Lecture delivered by eminent speaker - average	Average of an increase in component competences after all the methods	Open question
3.1.	Ability to be actively engaged in tasks	3.06	4.23	3.37	3.65	to work in a team in a future, via practice, by creating more space on seminars, by discussing more societal topics with students
3.2.	Ability to create nice atmosphere and positive relations	3.26	4.17	3.69	3.71	
3.3.	Ability to solve conflicts in a group	2.89	4	3.46	3.58	
3.4.	Ability to motivate others to act	2.71	3.97	3.26	3.13	
3.5.	Ability to encourage others to achieve a mutual goal	2.74	3.83	3.4	3.32	
3.6.	Ability to respect norms and principles of a group and other people's opinion and ideas	3.46	4.06	3.57	3.697	
3.7.	Ability to convey information in an effective way	2.83	3.77	3.06	3.22	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		2.99	4.67	3.4		
	Communicativeness - indicators	brainstorming - average	teamwork - average	Lecture delivered by eminent speaker - average	Average of an increase in component competences after all the methods	Open question
4.1.	Ability to convey and receive information in a reliable way	3.11	3.86	3.31	3.43	to initiate more discussions and ask on opinions of students, to create more space for discussion with students, by creating more space to express opinion of students, involvement of practice
4.2.	Ability to establish and maintain appropriate interpersonal relations	3.23	4.14	3.46	3.61	
4.3.	Ability to express and interpret notions, thoughts and opinions in speaking and writing in a clear and understandbale way	3.06	3.74	3.17	3.32	
4.4.	Ability to interpret nonverbal communication	2.71	3.66	3.03	3.13	
4.5.	Ability to listen and respect other people's opinion	3.80	4.11	3.57	3.83	
4.6.	Ability to negotiate	2.74	3.54	2.91	3.06	

4.7.	Ability to express and defend one's own opinion	3.20	3.97	3.31	3.49	
4.8.	Ability to make self-presentation and speak in public	3.06	3.80	3.17	3.34	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		3.11	3.85	3.24		

4. Results from Questionnaire appendix 3 - for assessment of the evolution of transversal skills level of the students in practical teaching process (the level of possessed skills)

	Average result questionnaire 3 (average level of a skill prior to testing)	Average result questionnaire 3 (average level of a skill after testing)
Entrepreneurship	2.70	3.98
Creativity	2.419	3.819
Teamwork	3.10	4.33
Communicativeness	2.99	4.18

5. Results from Questionnaire appendix 2 - to measure the dynamics of changes in the evolution of acquired transversal competences (degree of change)

	Method I (brainstorming) - Average result of an increase in a skill questionnaire 2	Method II (teamwork) - Average result of an increase in a skill questionnaire 2	Method III (Lecture delivered by eminent speaker) - Average result of an increase in a skill questionnaire 2
Entrepreneurship	2.88	3.60	2.92
Creativity	2.86	3.65	3.195
Teamwork	2.99	4.67	3.4
Communicativeness	3.11	3.85	3.24

6. Results of research concerning an increase in the levels of transversal competences of particular students

Student No.	M1 - brainstorming					M2 -teamwork					M3 - Lecture delivered by eminent speaker				
	M1 Entrepreneurship (average)	M1 Creativity (average)	M1 Teamwork (average)	M1 Communicativens (average)	AVERAGE AFTER M1	M2 Entrepreneurship (average)	M2 Creativity (average)	M2 Teamwork (average)	M2 Communicativens (average)	AVERAGE AFTER M2	M3 Entrepreneurship (average)	M3 Creativity (average)	M3 Teamwork (average)	M3 Communicativens (average)	AVERAGE AFTER M3
A1	3,33	2,33	3,86	3,25	3,33	3,50	3,67	4,29	4,00	3,92	3,00	3,33	3,14	2,75	3,00
A2	3,33	3,00	3,43	3,13	3,25	3,67	3,33	3,71	3,50	3,58	3,17	2,67	3,14	3,25	3,13
A3	2,50	2,67	2,29	3,25	2,71	5,00	5,00	4,86	5,00	4,96	3,67	4,00	5,00	4,38	4,33
A4	2,83	2,67	2,29	3,88	3,00	2,67	2,67	3,29	3,13	3,00	2,67	2,67	3,00	3,13	2,92
A5	2,50	1,00	2,29	1,88	2,04	3,00	2,67	3,71	3,63	3,38	3,17	3,33	4,00	3,00	3,38
A6	1,33	1,67	1,00	0,75	1,08	4,17	4,67	4,86	4,88	4,67	2,67	3,33	3,43	2,88	3,04
A7	4,00	4,33	4,57	5,00	4,54	3,17	3,67	4,14	4,13	3,83	2,83	2,67	3,29	3,13	3,04
A8	3,67	3,67	3,43	4,50	3,88	3,17	3,00	4,29	3,75	3,67	3,83	3,33	3,43	3,63	3,58
A9	1,67	1,67	2,43	2,00	2,00	3,67	3,67	4,43	3,75	3,92	2,50	2,33	2,57	2,75	2,58
A10	3,33	4,00	2,86	3,00	3,17	3,67	4,00	3,43	3,63	3,63	0,83	0,67	1,14	1,50	1,13
A11	3,00	3,67	3,71	3,50	3,46	3,50	3,00	3,71	3,50	3,50	2,17	4,00	3,43	2,88	3,00
A12	3,83	3,33	3,43	3,75	3,63	2,67	3,00	3,71	3,50	3,29	4,33	4,00	4,43	4,75	4,46
B1	0,33	1,33	0,43	0,50	0,54	0,83	1,00	1,57	1,50	1,29	2,50	3,00	4,00	3,38	3,29
B2	2,83	2,33	2,71	2,88	2,75	4,83	4,67	4,71	4,88	4,79	4,67	5,00	4,71	5,00	4,83
B3	3,50	2,33	2,43	2,75	2,79	3,33	3,00	4,00	3,63	3,58	3,50	3,67	3,00	1,88	2,83
B4	1,33	1,33	1,00	1,00	1,13	2,67	3,00	3,00	3,00	2,92	3,50	5,00	3,86	3,25	3,71
B5	3,83	3,67	4,14	4,13	4,00	3,50	3,67	4,14	3,63	3,75	3,17	3,67	4,00	3,88	3,71
B6	2,67	2,33	3,43	3,38	3,08	4,00	4,33	4,43	4,00	4,17	2,67	3,00	3,14	3,13	3,00
B7	1,83	2,67	3,14	2,50	2,54	3,83	4,33	4,00	3,63	3,88	3,67	3,67	3,86	3,88	3,79
B8	2,67	2,33	2,57	2,50	2,54	3,83	3,33	4,00	3,88	3,83	2,83	3,00	4,00	3,88	3,54
B9	2,67	2,33	3,14	3,00	2,88	3,50	3,67	4,00	4,00	3,83	0,83	0,33	1,29	1,38	1,08
B10	4,33	4,33	4,43	4,50	4,42	3,17	3,33	3,71	3,75	3,54	3,00	2,67	3,71	3,00	3,17
B11	3,17	3,00	3,43	4,00	3,50	4,50	4,33	4,86	4,50	4,58	3,50	3,33	4,00	4,00	3,79

C1	2,67	3,00	3,14	3,13	3,00	4,33	4,67	4,71	4,38	4,50	3,67	3,67	3,71	3,63	3,67
C2	3,83	3,67	2,86	2,88	3,21	4,00	3,67	3,57	3,50	3,67	3,50	3,33	3,71	3,50	3,54
C3	3,17	3,33	4,00	4,13	3,75	3,33	4,00	4,14	4,25	3,96	3,17	2,67	3,00	3,63	3,21
C4	2,33	2,33	2,14	1,88	2,13	2,67	2,67	3,57	3,50	3,21	2,67	3,33	4,00	4,13	3,63
C5	2,83	4,00	3,29	3,25	3,25	4,17	4,33	4,29	4,50	4,33	2,00	3,00	2,14	2,13	2,21
C6	3,50	3,00	3,14	3,38	3,29	4,00	4,00	4,14	3,75	3,96	3,83	3,67	4,29	3,88	3,96
C7	2,67	2,67	3,29	3,38	3,08	4,00	4,67	4,71	4,13	4,33	2,17	2,00	2,71	2,38	2,38
C8	3,50	3,00	3,57	3,63	3,50	3,00	3,00	3,29	2,75	3,00	2,83	4,00	2,71	2,88	2,96
C9	2,50	2,33	2,29	3,25	2,67	4,33	3,33	4,00	4,38	4,13	2,50	3,67	3,14	3,25	3,08
C10	3,67	3,67	4,57	3,63	3,92	4,50	4,33	4,71	4,50	4,54	2,17	3,00	3,29	3,00	2,88
C11	3,00	3,33	2,43	3,50	3,04	3,83	3,67	3,71	3,88	3,79	3,33	3,67	3,43	3,38	3,42
C12	2,67	3,67	3,57	4,00	3,50	4,17	4,33	4,43	4,63	4,42	1,67	3,00	3,29	3,13	2,79
	2.88	2.86	2.99	3.11		3.6	3.65	4.67	3.85		2.92	3.19	3.4	3.24	

7. Information about testing

	Method I (brainstorming)	Method II (teamwork)	Method III (Lecture delivered by eminent speaker)
Testing start day	22. 02. 2017	08.03.2017	22.03.2017
Testing start time	9:05	9:05	10:40
Testing end day	1.03. 2017	22.3.2017	28.3.2017
Testing end time	12:00	12:00	10:25
Duration of testing (min)	320	320	160
Number of meetings with students	2	2	2
Number of dean's groups	3	3	3
Number of test groups during a meeting	3	3	3
Average size of test groups during a meeting	11,5 (11 and 12)	11,5 (11 and 12)	11,5 (11 and 12)

Number of instructors	2	2	2
Number of courses/subjects where methods were tested	1	1	1
Type of activity	Demand in tourism market, Attractiveness' of tourism destination	On-line communication of tourism destination Organizing events as a factor to overcome seasonality Analyzing visitor survey as a best practice example	Practical aspects of destination management at regional level Tax policy in tourism
Language of communication	Slovak		
Nationality of testers	Slovak		
Hofstede comparing cultures https://www.hofstede-insights.com/country-comparison/			
Power distance	100%		
Individualism	52%		
Masculinity	100%		
Uncertainty Avoidance	51%		
Long Term Orientation	77%		
Indulgence	28%		

8. Students' assessment regarding the tested process as beneficial for their professional development.

Assessment indicator	Numbers of students	Percentage of students
0 - no impact on the development	0	-
1 - beneficial in a very small extent	0	-
2 - beneficial in a small extent	1	3%
3 - beneficial in a medium extent	12	34.2%
4 - beneficial in a high extent	18	51.4%
5 - beneficial in a very high extent	4	11.4%

9. Description of experiences of researchers testing the process

- Each class or lecture, the group of students was divided into teams to ensure proper organization of testing work.
- With each method, students worked in various teams. It was difficult to keep the same groups as not all the students attended the classes.
- The students were divided into groups, with the size of 11 or 12 people in relation to their attendance of classes.
- Sometimes it was visible the influence of "strong" personality in the group in a positive or negative manner and it might impact on the results of testing as well (by filling questionnaires).
- Generally, students evaluated positively their participation in the testing process. Students appreciated the variety of classes and exploitation of methods, that are not very common, esp. brainstorming.
- Several students appreciated the possibility to express own opinion and space for discussion, which is not created on all classes or seminars. Several students suggested to incorporate this methodology into more subjects delivered at Matej Bel University.

3.7. APPENDIX NO. 7

Development of the results of testing process 5 (CUT)

1. Process 5 presentation

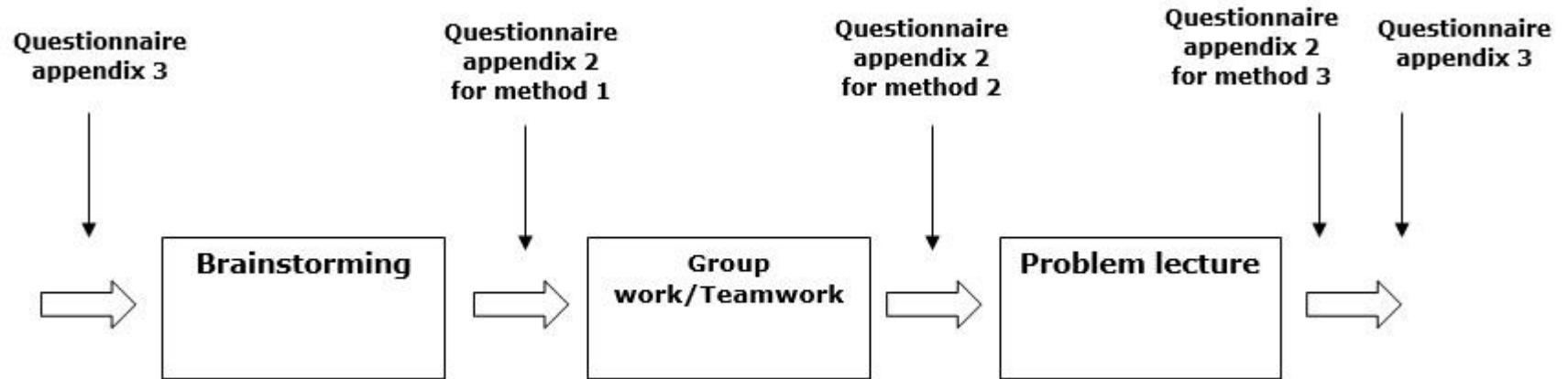


Figure 1. Application of practical teaching methods in process 5 - CUT.

Questionnaire appendix 2 - to measure the dynamics of changes in the evolution of acquired transversal competences (degree of change)

Questionnaire appendix 3 - for assessment of the evolution of transversal skills level of the students in practical teaching process (the level of possessed skills)

2. Schedule of conducting process 1 testing (CUT)

Date	Time	Subject	Process stage	Duration	Place	Testers	Number of participants in classes / number of filled-in questionnaires
04.04.17	11:05-11:50	organization and management methods	STAGE I OF METHOD I – Introduction to the project and process. Filling in the questionnaire concerning the level of transversal competences at the beginning of testing. Introduction to the method I - Brainstorming	45 min	Akademicka 19 B, Czestochowa University of Technology, tutorial and laboratory room	instructor: L. Kieltyka, Professor R. Kuceba, Professor W Jędrzejczyk, Professor E. Kulej-Dudek, PhD, Eng. P. Pyplacz, PhD, Eng.	18/ NA
11.04.17	11:05-11:50	organization and management methods	STAGE II OF METHOD I – Characteristics of method I - Brainstorming ; dividing students into groups; presentation of problem tasks; running classes using brainstorming .	45 min	Akademicka 19 B, Czestochowa University of Technology, tutorial and laboratory room	instructor: L. Kieltyka, Professor R. Kuceba, Professor W Jędrzejczyk, Professor E. Kulej-Dudek, PhD, Eng. P. Pyplacz, PhD, Eng.	16/16
25.04.17	11:05-11:50	organization and management methods	STAGE III OF METHOD I - Summing up the results concerning solving problems; filling in the questionnaire concerning an increase in transversal competences after using method I brainstorming .	45 min	Akademicka 19 B, Czestochowa University of Technology, tutorial and laboratory room	instructor: L. Kieltyka, Professor R. Kuceba, Professor W Jędrzejczyk, Professor E. Kulej-Dudek, PhD, Eng. P. Pyplacz, PhD, Eng.	16/16
9.05.17	11:05-11:50	organization and management methods	STAGE I OF METHOD II - Introduction to method II, discussing the idea - group work/team work , presentation of stages of group work in the classes, presentation of problem task, conducting classes using group work/team work .	45 min	Akademicka 19 B, Czestochowa University of Technology, tutorial and laboratory room	instructor: L. Kieltyka, Professor R. Kuceba, Professor W Jędrzejczyk, Professor E. Kulej-Dudek, PhD, Eng. P. Pyplacz, PhD, Eng.	17/NA
23.05.17	11:05-11:50	organization and management	STAGE II OF METHOD II – discussion and summing up the results concerning solving problem using group work/team work , filling	90 min	Akademicka 19 B, Czestochowa University of	instructor: L. Kieltyka, Professor R. Kuceba, Professor	17/17

		methods	in the questionnaire concerning an increase in transversal competences using method II group work/team work		Technology, tutorial and laboratory room	W Jędrzejczyk, Professor E. Kulej-Dudek, PhD, Eng. P. Pyplacz, PhD, Eng. representative of 1 business from the Silesian Region	
5.06.17	11:05-12:45	organization and management methods	STAGE OF METHOD III – Characteristics of method III – Problem lecture ; conducting classes using method III. Summing up the results; filling in the questionnaire concerning an increase in transversal competences after using method III problem lecture . Filling in the questionnaire concerning an increase in transversal competences after the entire testing process.	90 min	Akademicka 19 B, Czestochowa University of Technology, tutorial room	instructor: L. Kieltyka, Professor R. Kuceba, Professor W Jędrzejczyk, Professor E. Kulej-Dudek, PhD, Eng. K. Smolağ, PhD, Eng.	18/16

Testing group data: **Faculty:** Management, **Field of study:** Management, **Year:** 2, **Sem.** 4, First-cycle studies

The research comprised 18 students, out of whom 16 took part in the entire research process. All the questionnaires were filled in by 16 students. Data that was rejected was the one provided by students who did not participate in the entire research process, e.g. filled in questionnaire 2 and not 3, or they participated in one or two testing stages. Data analysis comprised results provided by 16 students, which is compliant with "Instruction for preparing and testing models of processes of developing transversal skills as part of practical training" where the minimum number of students is 15.

3. Results of research concerning an increase in particular transversal competences (results Questionnaire appendix no. 2) for n=16 (students)

	Entrepreneurship – indicators	Brainstorming - average	Group work/ team work - average	Problem lecture - average	Average of an increase in component competences after all the methods	Open question
1.1.	Ability to effect and accept changes	3,88	3,88	3,56	3,77	
1.2.	Ability to perform a critical evaluation of entrepreneurial opportunities	3,88	3,94	3,75	3,85	
1.3.	Ability to plan creative solutions	4,13	4,13	3,88	4,04	
1.4.	Ability to come up with new, creative solutions	3,94	4,13	3,88	3,98	

1.5.	Ability to undertake rational risk	4,06	3,63	3,56	3,75	
1.6.	Ability to change ideas into specific activity	4,06	4	3,88	3,98	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		3,99	3,95	3,75		
	Creativity – indicators	Brainstorming - average	Group work/ team work - average	Problem lecture - average	Average of an increase in component competences after all the methods	Open question
2.1.	Ability to make use of creative thinking	3,94	3,88	3,69	3,83	Creative thinking is possible in relaxing circumstances.
2.2.	Ability to come up with original and useful solutions to problems	4,19	3,94	3,88	4	
2.3.	Ability to develop new concepts or new associations with existing ideas and concepts	3,56	3,63	3,81	3,67	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		3,9	3,81	3,79		
	Teamwork -indicators	Brainstorming - average	Group work/ team work - average	Problem lecture - average	Average of an increase in component competences after all the methods	Open question
3.1.	Ability to be actively engaged in tasks	4,06	4,25	3,69	4	Division into a group - the competition combined with the prize is the most important element of method.
3.2.	Ability to create nice atmosphere and positive relations	4,13	4,31	4,06	4,17	
3.3.	Ability to solve conflicts in a group	4	4,06	3,75	3,94	
3.4.	Ability to motivate others to act	3,94	4,31	3,88	4,04	
3.5.	Ability to encourage others to achieve a mutual goal	4,13	3,81	4,13	4,02	
3.6.	Ability to respect norms and principles of a group and other people's opinion and ideas	3,81	3,75	3,88	3,81	

3.7.	Ability to convey information in an effective way	4	4,19	4,14	4,1	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		4,01	4,1	3,93		
	Communicativeness - indicators	Brainstorming - average	Group work/ team work - average	Problem lecture - average	Average of an increase in component competences after all the methods	Open question
4.1.	Ability to convey and receive information in a reliable way	4,13	3,94	3,69	3,92	
4.2.	Ability to establish and maintain appropriate interpersonal relations	4,25	4,06	4	4,1	
4.3.	Ability to express and interpret notions, thoughts and opinions in speaking and writing in a clear and understandable way	3,94	4,13	3,94	4	
4.4.	Ability to interpret nonverbal communication	3,75	4	3,94	3,9	
4.5.	Ability to listen and respect other people's opinion	3,88	4,13	3,93	4	
4.6.	Ability to negotiate	3,94	4,31	3,88	4,04	
4.7.	Ability to express and defend one's own opinion	4,13	4,06	4	4,06	
4.8.	Ability to make self-presentation and speak in public	3,56	4	3,56	3,71	
AVERAGE OF AN INCREASE IN THE LEVEL OF A COMPETENCE AFTER EACH METHOD		3,95	4,08	3,88		

4. Results from Questionnaire appendix 3 - for assessment of the evolution of transversal skills level of the students in practical teaching process (the level of possessed skills)

	Average result questionnaire 3 (average level of a skill prior to testing)	Average result questionnaire 3 (average level of a skill after testing)
Entrepreneurship	3,54	4,18
Creativity	3,25	4,23
Teamwork	3,61	4,29
Communicativeness	3,84	4,29

5. Results from Questionnaire appendix 2 - to measure the dynamics of changes in the evolution of acquired transversal competences (degree of change)

	Method I (brainstorming) - Average result of an increase in a skill questionnaire 2	Method II (group work/team work) - Average result of an increase in a skill questionnaire 2	Method III (problem lecture) - Average result of an increase in a skill questionnaire 2
Entrepreneurship	3,99	3,95	3,75
Creativity	3,9	3,81	3,79
Teamwork	4,01	4,1	3,93
Communicativeness	3,95	4,08	3,88

6. Results of research concerning an increase in the levels of transversal competences of particular students

M1 - brainstorming						M2 – group work/team work					M3 – problem lecture				
Student No.	M1 Entrepreneurship (average)	M1 Creativity (average)	M1 Teamwork (average)	M1 Communicativeness (average)	AVERAGE AFTER M1	M2 Entrepreneurship (average)	M2 Creativity (average)	M2 Teamwork (average)	M2 Communicativeness (average)	AVERAGE AFTER M2	M3 Entrepreneurship (average)	M3 Creativity (average)	M3 Teamwork (average)	M3 Communicativeness (average)	AVERAGE AFTER M3
122038	4,17	4,00	4,14	3,63	3,98	4,50	5,00	4,29	4,50	4,57	3,83	4,33	4,57	4,75	4,37
124536	3,33	3,00	3,57	3,50	3,35	3,17	3,00	4,00	4,00	3,54	3,83	3,67	3,71	3,00	3,55
124541	4,33	4,67	4,71	4,25	4,49	5,00	4,33	4,00	4,25	4,40	4,83	4,67	4,86	4,13	4,62
125437	4,17	4,00	4,00	4,00	4,04	4,00	4,00	3,71	3,63	3,83	4,00	4,00	4,00	4,38	4,09
122057	4,33	4,00	4,71	4,63	4,42	3,83	4,00	4,00	4,00	3,96	4,83	4,67	4,29	4,50	4,57
125057	3,83	4,00	3,71	3,75	3,82	3,83	3,33	3,86	4,38	3,85	4,50	4,67	4,86	4,75	4,69
125136	3,33	3,33	1,86	3,00	2,88	3,33	3,67	3,57	3,38	3,49	3,83	4,00	3,86	4,13	3,95
125137	3,67	3,00	3,86	3,50	3,51	3,50	2,67	3,86	3,63	3,41	4,00	4,00	4,00	3,88	3,97
124543	4,50	4,33	4,86	4,50	4,55	3,83	4,00	4,29	4,13	4,06	3,50	3,33	4,43	2,88	3,53
124544	4,33	4,00	4,00	4,00	4,08	4,00	4,00	4,86	4,63	4,37	1,33	1,00	0,86	1,13	1,08
124545	4,17	4,67	4,00	4,00	4,21	4,00	4,00	4,43	4,00	4,11	4,17	4,00	4,14	4,00	4,08
116161	3,33	4,33	4,29	4,00	3,99	4,17	4,33	4,71	4,88	4,52	4,83	4,00	4,43	4,38	4,41
124547	4,17	3,33	4,29	4,38	4,04	3,83	4,00	4,14	4,50	4,12	0,33	2,33	2,57	3,25	2,12
124548	4,17	4,33	4,43	4,25	4,29	4,00	4,00	4,71	3,88	4,15	4,33	4,00	4,43	4,25	4,25
124584	3,83	3,00	3,71	3,63	3,54	4,00	3,33	4,00	3,63	3,74	3,50	3,67	3,71	4,00	3,72
124549	4,17	4,33	4,00	4,13	4,16	4,17	3,33	3,14	3,88	3,63	4,33	4,33	4,14	4,63	4,36
	3,99	3,9	4,01	3,95		3,95	3,81	4,1	4,08		3,75	3,79	3,93	3,88	

7. Information about testing

	Method I (brainstorming)	Method II (group work/team work)	Method III (problem lecture)
Testing start day	4.04.2017	9.05.2017	5.06.2017
Testing start time	11:05	11:05	11:05
Testing end day	25.04.2017	23.05.2017	5.06.2017
Testing end time	11:50	11:50	12:45
Duration of testing (min)	135	90	90
Number of meetings with students	3	2	1
Number of dean's groups	2	2	2
Number of test groups during a meeting	3	3	3
Average size of test groups during a meeting	6	6	6
Number of instructors	5	5	5
Number of courses/subjects where methods were tested	1/ organization and management methods	1/ organization and management methods	1/ organization and management methods
Type of activity	laboratory classes	laboratory classes	lecture
Language of communication	Polish		
Nationality of testers	POLAND		
Hofstede comparing cultures https://www.hofstede-insights.com/country-comparison/			
Power distance	68		
Individualism	60		
Masculinity	64		

Uncertainty Avoidance	93
Long Term Orientation	38
Indulgence	29

8. Students' assessment regarding the tested process as beneficial for their professional development.

Assessment indicator	Numbers of students	Percentage of students
0 - no impact on the development	0	-
1 - beneficial in a very small extent	0	-
2 - beneficial in a small extent	0	-
3 - beneficial in a medium extent	1	6%
4 - beneficial in a high extent	9	56%
5 - beneficial in a very high extent	6	38%

9. Description of experiences of researchers testing the process

- Each time the group was divided into teams to ensure proper organization of testing work.
- We analyzed an increase in an individual and not a group.
- With each method, students worked in various teams. It was difficult to keep the same groups as not all the students attended the classes.
- The students were divided into groups, with the size of 5 to 6.

APPENDIX NO. 8

Selection of test groups

Research methodology

Aim: to evaluate an increase in transversal competences among students taking part in testing new processes with the use of practical teaching methods in selected EU countries

Detailed aims:

1. Evaluation of an increase in the "entrepreneurship" competence
2. Evaluation of an increase in the "creativity" competence
3. Evaluation of an increase in the "communicativeness" competence
4. Evaluation of an increase in the "teamwork" competence

Object of research: transversal competences

- entrepreneurship
- creativity
- communicativeness
- teamwork

Population analyzed: Higher education students from Finland, Poland, Slovakia and Slovenia.

Subject of research: pace of an increase in transversal competences during a new training process called a process including practical teaching methods drawn from a developed matrix – document IO3 Matrix of the dependencies between practical teaching methods and an increase in students' transversal competences.

Sample analyzed: The analyzed sample will be composed of selected groups of students as declared by University study programme. The sampling should be viewed as purposive-typical. The purposefulness of the selection is connected with securing full dean's groups to be tested. The typical character of the selection is tied with securing the identifiability of subjects as students. It is required then that research participants be identified, e.g. by means of attendance lists. In order to secure the comparability of data, it is assumed that groups subject to research will be made up of full-time students.

The preliminary structure of the analyzed sample is contained in the following table.

Country/university		Semester	Subject	Number of groups	Group size	Ratio females/males	Number of hours lectures/ tutorials
Finland Centria	Process	1st	Communication	3-5	30	20/80	30/30
Poland Poznan University of Technology	Process I	2nd/ second- cycle	Motivation systems	1	25	50/50	15/15
		4th	Marketing research	3	20	70/30	30/30
		3rd/ second- cycle	Internet and mobile marketing	5	20	70/30	15/15
Poland Czestochowa University of Technology	Process I	4th	Production and services management	1	30	43/57	30/30
	Process II	2nd	Organizational studies	2	25	50/50	30/15
	Process III	4th	Organization and management methods	2	24	50/50	30/15
Slovenia Maribor University	Process I	6th	Management of small and medium-sized enterprises	1	15	95/5	30/30
	Process II	8th	Credibility and organizational culture	1	15	80/20	30/15
	Process III	8th	Development of a dynamic enterprise	1	15	80/20	30/15
Slovakia Banska Bistrica University	Process I	5th	Marketing st.	3	25	75/25	30/15
Poland Wrocław University of Technology	Process I		Knowledge management	2	20	30/70	15/15

The following scheme of selection is recommended to the Partners:

1. Determining at least three groups of students for one selected process (containing at least 3 practical teaching methods selected in accordance with the guidelines). Groups tested within one process may be tested both within one course or two of three courses, e.g. a process with selected and sequentially determined practical teaching methods may be tested:
 - a. by different tutors in different groups, e.g. 3 different tutors in 3 different courses (subjects) or
 - b. by 1 tutor in the same course – one tutor within 1 course.
2. The size of a group of testers is connected with the systematicity of dividing groups characteristic for each university. It is assumed, however, that test groups should be of the same size for a chosen process and they should not be smaller than 5 persons and larger than 30 persons. The permissible difference in the number of students in three consecutive test groups of a given Institution should not be greater than 20% of their size. Thanks to that, comparison of results between them will be possible.
3. Selection to test groups should reflect the way of assignment to student groups adopted in a given partner's unit, i.e. students should be formally listed as students of a given course.
4. It is necessary to build test groups in accordance with guidelines adopted in the present document. In case of creating separate rules to build test groups, it is possible for non-substantive factors influencing the testing process to emerge. They include: peer bonds, cliquishness, subjective barriers in the execution of tasks, which will significantly impede the interpretation of results.

Examples of test groups:

1. Example 1
 - a. Subject: Management
 - b. Number of course participants: 110
 - c. Type of classes: tutorials
 - d. Number of dean's groups: 4
 - e. Size of dean's groups:
 - i. 1 dean's group: 30 persons
 - ii. 2 dean's group: 25 persons
 - iii. 3 dean's group: 27 persons
 - iv. 4 dean's group: 28 persons
 - f. Sampling – variant 1
 - 1, 2 and 3 dean's group – in accordance with the size, the difference in the number of students in particular groups is lower than 20%.
 - g. Sampling – variant 2
 - 1 dean's group divided into 3 test groups with 10 persons in each of them
 - h. Sampling – variant 3

1 dean's group – randomly chosen 15 persons divided into 3 test groups with 5 persons in each of them

2. Example 2

- a. Subject:
 - i. Management
 - ii. Employee motivation
 - iii. Management fundamentals
- b. Type of classes: laboratory classes
- c. Number of course participants:
 - i. Management: 20
 - ii. Employee motivation: 40
 - iii. Marketing fundamentals: 15
- d. Number of dean's groups:
 - i. Management: 1
 - ii. Employee motivation: 2
 - iii. Marketing fundamentals: 1
- e. Size of dean's groups:
 - i. 1 dean's group (Management): 20 persons
 - ii. 2 dean's group (Employee motivation): 20 persons
 - iii. 3 dean's group (Employee motivation): 20 persons
 - iv. 4 dean's group (Marketing fundamentals): 15 persons
- f. Sampling – variant 1
1, 2 and 3 dean's group (dean's group 4 in this selection **the group rejected due to the size between groups being greater than 20%**)
- g. Sampling – variant 2
4 dean's group divided into 3 test groups with 5 persons in each of them