ACCELERATE TRANSVERSAL COMPETENCES

Erasmus+

The acceleration method of development of transversal competences in the students' practical training process.

Sheet of the first process of developing transversal skills as part of practical training

I.	**No. of intellectual work result**	O5	II.	**Testing period**	01 April 2017- 31 October 2017
III.	**Partner conducting testing**			Poznan University of Technology	

1. Process presentation

Questionnaire appendix 3

Questionnaire appendix 2 for method 1

Questionnaire appendix 2 for method 2

Questionnaire appendix 2 for method 2

Questtionaire appendix 3

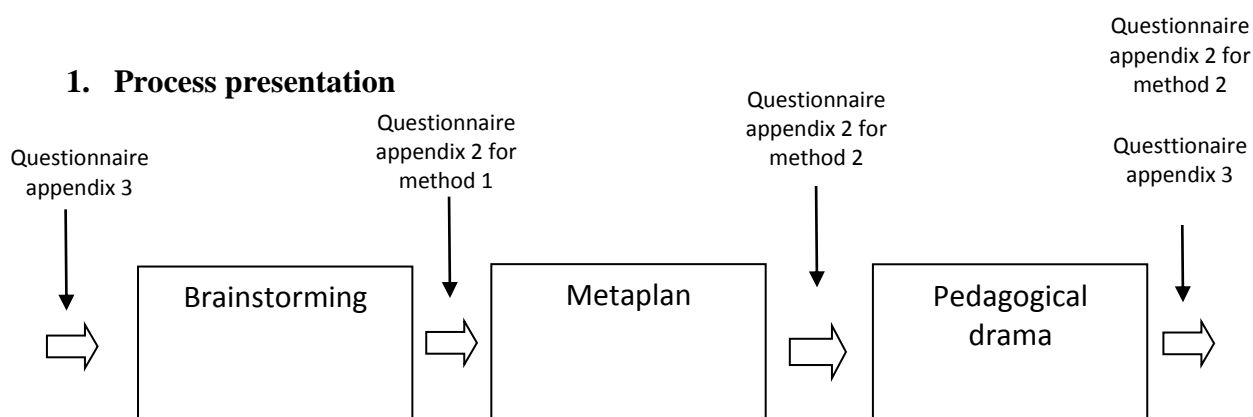Brainstorming → Metaplan → Pedagogical drama →

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

Number of method in the process	Practical teaching method	Quartile	Rank	Entrepre-neurship (E)	Creativity (Cr)	Communi-cativeness (Com)	Teamwork (T)	Group of methods	Result
1.	Brainstorming	I	3	0.97	1.25	0.96	0.94	Problem-solving methods	4.11
2.	Metaplan	I	8	0.95	1.08	0.88	0.92	Problem-solving methods	3.83
3.	Pedagogical drama	II	19	0.77	1.00	0.72	1.00	Other methods	3.49

2. Analysis of the ways of using practical teaching methods selected for the process of developing transversal skills

Methods	Analysis
Brainstorming	1.1. Brainstorming is classified as a method of solving problems in a creative way - based on collective thinking over a detailed/specific question or problem. Brainstorming is related to heuristic methods (in Greek heurisko – to find) that deal with principles of creative thinking and stimulating people to seek new solutions. The method was popularized and described by A.F. Osborn. Brainstorming aims at generating the highest possible number of creative ideas used to solve a problem or answer a set question. The method is linked with solving quality-related problems, requires ingenuity, intuition, vivid imagination and is devoid of criticism. During the implementation of the method, participants moderated by the leader propose as many non-standard, innovative or even unreal ideas as possible, which cannot be criticised (the group should mutually inspire itself). Source literature provides multiple forms of using creative thinking which are close to brainstorming: Method 635, Nominal group technique, Snowball sampling, Individual "stream of consciousness", Digital brainstorming. In the teaching process, brainstorming is used for solving specific problems and is a method of creativity development. Therefore, it is essential for this method to be included in the group of methods that initiate work with students. Due to its universality, the method is during tutorials, project classes and seminars, where it is necessary to increase the ability to think creatively (the cognitive process needs to be strengthened by various sources of information) as well as during discussing, specifying and presenting a problem. At the Faculty of Management Engineering of Poznan University of Technology, the method of brainstorming is used both at first-, second- and third-cycle levels of full-time and part-time courses in subjects such as Marketing research, Marketing, Internet and mobile marketing, Market strategies, Logistics services marketing. Brainstorming is a commonly used method, particularly preferred in case of subjects requiring coming up with creative solutions to problems and participation of a constructively cooperative group. Despite its popularity, brainstorming in formal education is used in 14,70% in relation to project methods, 4.47% during tutorials and 4,34% during laboratory classes – based on Report 01 covering the analysis of universities' course load. As part of informal education, student science clubs and student organizations pointed to brainstorming as the main problem-solving method used in learning. Analyzing the most popular methods of teaching transversal competences, brainstorming is ranked in the third place, dedicated mainly in the process of teaching creativity and entrepreneurship (Report O3).
	1.2. The principal aim of brainstorming is to collectively solve problems through generating ideas. For this reason, the method should be placed in the group of methods initiating education models as part of a quick increase in transversal competences. Taking into account analyses of teaching programmes and employers' opinions contained in Reports O1, O2 and O3, brainstorming should be primarily used to develop skills related to creativity, entrepreneurship, communicativeness and teamwork. Due to the fact that the method is more efficient in group activities than in individual work over a given problem, using the method requires the preparation of problem tasks. The method most frequently covers three stages: a) preparation – introduction to the method, acquaintance with the rules of proceeding, selection of participants, ensuring conditions for productive work, informing about the essence of the problem, b) ideas generating session – essential part (a few/several persons) in accordance with

the scenario realized by the moderator (the class tutor or a student prepared to take on the role of a moderator), students furnish ideas which are noted on the board; class participants inspire each other, often suggesting new unconventional solutions. At this stage, students' ideas cannot be criticised, the principle of "quantity creates quality" applies

c) evaluation of solutions/answers, which is based on criteria such as economic, technical and ergonomic. Students analyze in a detailed way advantages and disadvantages of their ideas, learn group cooperation and often defend their ideas quoting logical arguments.

The class tutor should summarize the results of work, assess each group member's commitment to work, taking into consideration assessment made by group leaders/moderators.

1.3. The method will be used as part of the subject "Internet and mobile marketing" in a group of second-cycle students at the Faculty of Management Engineering, full-time studies, 3rd semester, specialization of Management Engineering (the subject taught during 15 hrs of lectures and 15 hrs of tutorials).

Three meetings are planned (week-long intervals between meetings are recommended).

A. Meeting I - (time of duration: 45 mins.)

- explanation of problem-solving methods based on creative thinking and introduction to brainstorming (origins, general rules, application),

- introduction to the subject matter of the project – explanation of the significance of activities connected with the process of developing transversal competences as part of practical training. Description of competences and skills connected with creativity, entrepreneurship, communicativeness and teamwork. Explanation what transversal competences are, giving labour market examples and indicating the link between the need for teaching skills at a higher level with employers' needs,

- description of research tools which are made use of in the project.

As it is necessary to assess the level of competences prior to and after the testing process of education involving practical teaching methods based on the customized questionnaire for measuring the evaluation of the level of students' transversal competences as part of practical training – the entire process of developing transversal competences with the indication of selected methods used in the process must be discussed. The presentation of tenets and consecutive stages of the process will have an influence on making students aware of the significance of implemented activities (nonrandomness) and stresses the importance of linking the education process with market requirements. Conducting the method in a standardized form will also be an essential element in disseminating the developed model and should help in students accepting participation in the method.

- The first meeting is also devoted to the selection of problematic aspects within the subject "Internet and mobile marketing", which will be dealt with during classes and which directly stem from the need for "being" entrepreneurial and creative. Example problems to be analyzed might be, e.g. choosing the subject and character of a blog or the scope of benefits a blog should bring.

- dividing students into groups – one should organize groups for the implementation of the brainstorming method – minimum 5 persons, maximum 12, choose a moderator (bearing in mind the required characteristics – e.g. decisiveness, composure, communicativeness, tact…), indicate a specific problem that will be tackled so that students could prepare themselves to deal with it. The first part of the method may be realized during lectures.

B. Meeting II- aimed at realizing the teaching method compliant with the prepared scenario (developed by the moderator in conjunction with, e.g. "the moderator's technical assistant") (time of duration 90 mins.).

	"Ingenuity session" begins with the presentation of participants and presentation of rules of proceeding during the meeting (10-15 min). - Next, the moderator (or the technical assistant) writes down the topic/problem that is to be dealt with during the meeting. - The participants propose ideas which are recorded on the board. None of the ideas nor any of the participants are evaluated. - The tutor must ensure fair and equal rules of participation (number of utterances, right to speak) for all the participants. - When generating ideas, no detailed analyses of any solutions are made. The only exception is explaining any complex terms and phrases made by a person who proposes a given idea. - The second stage of brainstorming is summarized by encouraging the proposal of ideas which are a compilation of ideas which were previously put forward. - The meeting, with the participants' permission, may be recorded (voice recorder or video camera) so that fragments of FGI with the participants' emotional involvement could be analyzed for educational purposes. C. The last part is devoted to evaluating the generated ideas and forms both the summary of work done to solve a given problem (choice of a blog subject) and allows to draw conclusions related to the method used in solving the problem (time of duration 45 mins.). Two versions of the stages of evaluation can be adopted: an "expert" method in which it is recommended that evaluation be made by a different team than the team generating ideas or a "defence" method where the participants will be justifying and proving the relevance of their solutions. In the latter attitude, the skill of communicativeness is also trained. The last stage of the method ends with a questionnaire whose aim is to evaluate an increase in particular competences and with a discussion on the efficiency of the method and its potential application in solving educational, professional and common social problems. Conclusions drawn from this stage should also relate to the necessity for expanding/complementing the educational stage with further teaching methods which have the potential for the development of the remaining useful transversal competences. It should be an introduction to the implementation of further educational stages in the process of developing transversal skills as part of students' practical training.
Metaplan	2.1. The metaplan method ranks among problem-solving methods and consists in a graphical record of arguments obtained from a discussion on a given topic, conducted by participants. During a discussion, a poster is created, which is the final result. The method is used, among others, when resolving disputes or discussing difficult and contentious issues. When making use of a metaplan during solving a problem, students work in a group, actively listen to each other, look for creative solutions and communicate effectively with each other in order to present their opinions. When working on a solution to a problem, students learn to negotiate, present a problem and carry out a discussion. A very important stage during the application of the metaplan method is drawing conclusions and an effective presentation of a solution. Discussion participants develop their skill of concentration while seeking constructive solutions to problems and their ability to understand the significance of phenomena and events. A metaplan develops transversal competences related to entrepreneurship, creativity, teamwork and communicativeness. A metaplan, in particular, raises the level of the following skills (described as indicators of transversal competences in "Report O2 of the research of transversal skills requirement among entrepreneurs"):

- critical thinking;

- discussing;

- effective conveyance of infomation;

- listening to and respecting other people's opinions;

- negotiating in a discussion group;

- presenting diverse aspects of a given problem;

- presenting and defending one's own viewpoint;

- concluding and formulating one's thoughts in a concise way;

- solving problems in a creative way;

- cooperating in a discussion group: commitment to tasks, resolving conflicts in a group, encouraging others to take part in a discussion;

- spotting creative solutions and critical assessment.

At Poznan University of Technology, the metaplan method is used during tutorials, projects and seminars. Subjects in which a metaplan is used include:

- motivation systems – Faculty of Management Engineering, field of study - Management Engineering, second-cycle, 3rd semester, where students discuss motivational factors in organizations and record arguments and conclusions in the form of a metaplan.

- negotiations and negotiation techniques – Faculty of Management Engineering, field of study - Management Engineering, first-cycle, 5th semester. During classes, the metaplan technique is used when students learn about mediation strategies or arbitration.

- employee team management – Faculty of Mechanical Engineering and Management, field of study - Mechatronics, Management and Production Engineering, second-cycle, 1st semester. During classes, a metaplan is used to show differences between a group and an effective team. Class participants also consider possible difficulties in building a good team. A group discussion enables them to prepare appropriate arguments. Mutual inspiration, cooperation and effective communication make it possible to prepare a poster, which will be shown to all class participants.

2.2. Taking into account the conditions presented in part 1, in order to quickly increase transversal competences, the following assumptions related to using a metaplan are recommended to be made.

A/ Using a metaplan, first and foremost, to develop competences connected with teamwork, creativity and students' communicativeness.

B/ When using a metaplan during classes, one should prepare instructions for using this method. Instructions should contain necessary information for students in order to execute a task:

- rules for working in groups (group size: from 5 to 30 students, selection of a leader, secretary and reporter as well as characterizing their role and functions),

- elaboration on rules for a group discussion,

- tasks for each of the groups with questions:

a) how a task is solved – indication of errors in a given solution;

b) how it should be – presenting the correct solution;

c) why such errors were made – explaining what an error consists in;

d) conclusions – what errors should be avoided;

- presentation of a scheme which will make it easier to create a poster using the metaplan method;

- presentation of the metaplan scheme – schemes should be displayed in full view, time of presentation for each group should be the same;

- self-evaluation of work and presentation, evaluation of particular group members is made by the tutor;

- the final evaluation of a group's work is arranged by the tutor who takes into account students' self-assessment.

C/ The class tutor, setting down the rules for carrying out a discussion, must strive after increasing skills connected with: conveying information in an effective way; listening to and respecting other people's opinions; negotiating; presenting multiple aspects of a given problem; presenting and defending one's own viewpoint; concluding and formulating thoughts in a concise way; solving problems in a creative way; spotting creative solutions and making critical evaluations; cooperating in a group and resolving conflicts.

Having used a metaplan, students get a better understanding of a given problem, are able to indicate a solution and draw conclusions. After this stage, they can begin to use method 3 – drama. Knowing the solution presented in the metaplan scheme, they can assume the role in a more conscious way, which will allow them to solve a problem in a more efficient way.

2.3. Scheme of using the METAPLAN method.
Introductory stage:
  - familiarizing students with the main aims of the activity,
  - dividing students into groups,
  - specifying the duration of work,
  - presenting the problem.
Proper stage:
- students write down on sheets of paper an answer to the question: **How is it?** and stick them in a given place on a poster (evaluation of the current situation),
- students write down on sheets of paper an answer to the question: **How should it be?** and also stick them in a given place in the metaplan scheme (pointing to possible improvement of the current situation),
- students write down on sheets of paper an answer to the question: **Why is it not how it should be?** and also stick them on the poster (considering possible reasons for a specific situation).
Final stage:
- each team works on conclusions,
- specifying the content of conclusions, whose implementation will lead to improving the situation.
Scenario of using the metaplan method
Subject: Motivation systems
Form of classes: tutorials
Time of duration: 150 mins. (during 4 teaching hours that is 180 mins. out of which 30 mins. is preparatory-conclusive time).
Topic: "Major problems during designing motivation systems in an organization".

  1.   Acquainting students with the main tenets of a metaplan (20 mins.)

2. Dividing students into three groups (two 8-person groups and one 9-person group – the whole group numbers 25 persons). Students work for 4 hours in the same groups; selection of the group leader (10 mins.).
3. Multimedia presentation given by a lecturer and relating to "Designing motivation systems in an organization". The aim of the lecture is to introduce students to a given topic (30 mins.).
4. Providing students with the topic which will be put to analysis using a metaplan (5 mins.).
5. Distributing among students materials used during using a metaplan – large sheets of paper, paper slips in three different colours, marker pens and the scheme of a metaplan (5mins.).
6. Asking students to analyze, drawing on the information gained in the first part of the class and their own knowledge, the problem in three groups and write down their observations and arguments in the metaplan scheme (metaplan points: "How is it?", "How should it be?", "Why is it not how it should be?" and "Conclusions") (30 mins.).
7. Presenting discussion results by the leaders of three groups (30 mins.).
8. Summarizing the analyzed problem by the lecturer.
9. Filling in a questionnaire by students concerning the evaluation of an increase in transversal competences (20 mins.).

Metaplan scheme - example
PROBLEM
Major problems with designing motivation systems in an organization

How is it?	How should it be?
Lack of knowledge about designing motivation systems	Designing motivation systems with the help of HR experts
Lack of commitment on the part of employees designing motivation systems	Competent and passionate professionals should be employed
Lack of information about company employees	Individual approach to each employee
Lack of time leads to general tenets of motivation systems	Individual approach to each organization during designing motivation systems

Why is it not as it should be?
Organizational culture, managers' mentality, HR specialists' lack of expertise related to designing motivation systems, shortage of money for analyzing employees' needs and haste lead to ineffective motivation systems.

CONCLUSIONS
- Acquaintance with the stages of designing motivation systems and material and non-material factors affecting employees' performance is the basis for developing motivation systems;
- Acquaintance with employees' needs and individual approach to employees leads to designing effective motivation systems;
- Effective communication among employees and managers in an organization is the basis for recognizing motivating and demotivating factors.

| Pedagogical drama | 3.1. Drama (in Greek – to act, to do) is an auxiliary method used in teaching diverse subjects. The aim of the person who conducts drama is to create a fictitious situation in which participants can assume various roles. Conducting drama consists of the following phases: introduction by the class tutor (discussing the initial situation giving rise to dramatic fiction), preparing participants to assume roles, playing the roles by participants, analyzing students' work.

Role-playing is used when teaching various subjects at the Faculty of Management Engineering at Poznan University of Technology.

Subjects connected with the promotion of businesses and products cover instruction in direct selling techniques, which facilitate communication with clients and enhance the power of persuasion when encouraging to purchase products. Different communication techniques are used in particular phases of the direct selling process (first contact with the client, e.g. during a telephone call, introduction to selling, classification of clients' problems, presentation of products, overcoming objections, closing the selling process). Students, working in two-person groups, play the roles of a seller and a buyer in various phases of the selling process, with the seller using communication techniques previously presented by the class tutor. In case of providing services to business entities, the whole selling process is simulated and video-recorded, with selected products of these entities being presented and real objections reported. The recordings are subject to multi-criteria evaluation (ways to communicate, body language, adjustment to buyer's personality, etc.).

In subjects related to international marketing, internationalization of businesses and distribution management, games simulating business negotiations are used. During the game, negotiations which lead to concluding a commercial agreement of a given type (export-import, agency, distribution, joint venture) are imitated. Students play the roles of negotiation team members (chairperson and consultants). The teams receive scenarios which contain descriptions of, among others, business entities represented by the teams and negotiation aims. The aims partly stand in contrast to each other. The scenarios contain data allowing to carry out simple calculations necessary to prepare and conduct negotiations. Apart from scenarios, the teams receive templates of agreements of a particular type. These templates feature typical variants of proceedings when dealing with constituent decision problems. The teams attempt to obtain the highest possible economic and financial benefits. How these benefits are to be measured is decided autonomously by particular teams. Negotiations should result in signing a mutually beneficial agreement. It is, however, allowed not to sign an agreement as a result of differences impossible to overcome. The evaluation of negotiation results is effected by comparing agreements signed by particular pairs of negotiation teams. In case of international student groups, the language of instruction during the negotiation process will be English.

Role-playing is also used during classes where other subjects are taught, e.g. human resources management (playing the roles of: a recruiter and a candidate submitting his/her own CV, a work performance assessor and the assessed), social, interpersonal and business communication (e.g. playing the roles of team members striving after resolving a conflict), decisions and marketing games.

The descriptions featured above are not to suggest that drama is a frequently used teaching method. Tendency to decrease the number of teaching hours of some of the above-mentioned subjects is one of the factors that affects the reduction of frequency and scope of using drama. Analyzing the influence of drama on teaching transversal competences at PUT, one should underline a strong focus on communicativeness (ability to communicate in business) and group cooperation with a relatively lower |
|---|---|

influence on entrepreneurship and creativity.

3.2. Bearing in mind the conditions presented in part 1, it is recommended to adopt the following assumptions related to using drama in order to accelerate an increase in skills that make up transversal competences.

A/ Using drama, first and foremost, to develop skills connected with students' entrepreneurship and creativity.

B/ Drama should be more markedly geared towards preparing students for entrepreneurship rather than about entrepreneurship, replicating past entrepreneurial activity.

C/ Drama used in the development of entrepreneurship may assume multiple forms. Drama can be used in the form of "hot seating". Members of a student group take turns sitting on a hot chair and answering questions asked by the remaining members of the group who take on various roles. The class tutor determines the rules of asking questions - for instance, it can be in the form of interrogation during which the person sitting on a hot chair is "cross-examined".

D/ It is assumed that the student sitting on a hot chair presents a business idea or a business plan and must make sure the idea is accepted by others who play the roles of stakeholders (suppliers, intermediaries, bankers, firms financing entities in early phases of development – venture capital, clients, representatives of authorities offering grants, family members, etc.).

E/ Among those asking questions there should be invited entrepreneurs, representatives of chambers of commerce and industry, tutors teaching other subjects, etc.

F/ The general aim is to make students aware of different evaluations of business ideas made by particular stakeholders and their system of values. The class tutor specifying rules related to asking questions must seek to increase skills connected with: initiating and accepting changes, perceiving and critically evaluating entrepreneurial opportunities, planning and creating new unique solutions, taking rational risk, changing ideas into specific activities.

G/ The general concept of the transversal competences developmental process would be the following:

1/ using methods of creative solutions to problems geared towards divergent thinking, e.g. deferred valuation techniques, students generate and - after the break for incubating new ideas – evaluate business ideas,

2/ these ideas are recorded in a metaplan,

3/ using the "hot seating" method, ideas are subject to comprehensive evaluation and correction by students taking roles of stakeholders of a business undertaking and by invited entrepreneurs.

H/ Acceptance of the concept referred to in point "G" is tied with the acceptance of the assumption related to using drama as the third of the methods used in the process.

3.3. Drama will be used within the same subject as brainstorming - "Internet and mobile marketing" in the same group of students at the second-cycle level at the Faculty of Management Engineering, full-time studies, 3rd semester, specialization – Management Engineering (15 hrs of lectures and 15 hrs of tutorials).
Two meetings are planned.
    A. **Meeting I** - (time of duration: 90 mins.)
    - introduction to drama (general rules, types, applications). The type of drama to be

This project is supported by Erasmus+ Programme of the European Union. The contents of this publication are the sole responsibility of its authors and can in no way be taken to reflect the views of the National Agency and the Commission.

9

used will be "hot seating". Students in a given group take turns sitting on a hot chair and answering questions asked by the remaining members of the group taking on various roles. (15 mins.)

- choice of subject matter – continuation of the concept developed as a result of brainstorming and related to running a blog and the range of benefits the blog is to bring. (5 mins.)

- dividing students into groups – students will work in the same groups as in the case of brainstorming – minimum 5 persons, maximum 12, in each group one person who will sit first on a "hot chair" should be chosen - (5 mins.)

- discussing the rules of proceeding during the implementation of drama. The class tutor determines the rules for asking questions – form of interrogation during which the person sitting on a hot chair is "cross-examined". (10 mins.)

- Execution of a task using drama – the person sitting on a "hot chair" will play the role of a blog creator and will defend his/her idea and the way of presentation. The student must convince other participants playing the roles of blog users/readers that this is a good idea. Each member of a given group will be sitting on the chair for 5 minutes. The task lasts until all the "blog creators" present their ideas. (45 mins. – if there are more than 9 persons in the group, the time for individual presentations must be shortened to 4 mins. for each student).

- The class tutor must ensure fair and equal rules of participation (number of utterances, right to speak) for all the participants.

- Drama is summarized by encouraging all the participants to choose the most interesting ideas for blogs and the most interesting presentations. (15 mins.) The meeting, with the participants' permission, may be recorded (voice recorder or video camera) so that fragments of FGI with the participants' emotional involvement could be analyzed for educational purposes.

B. Meeting II – it is recommended that the meeting be held directly after meeting I, maximum break – 2 hrs - (time of duration 45 mins.)

The last stage of the method ends with a questionnaire whose aim is to evaluate an increase in students' transversal competences as part of practical training (appendix 3 to the instruction) and with a questionnaire to measure the dynamics of changes in the evaluation of acquired transversal competences (level of changes) (Appendix 2 to the instruction). All students participating as testers in the tested processes of practical training take part in the survey. Meeting II will be summarized with a discussion on the efficiency of used methods: brainstorming, metaplan, and drama and on their potential application in solving educational, professional and common social problems.

At the last meeting entrepreneurs will be engaged. Three companies that are the participants of the Partner in the Project WCIC will take part in testing process as observers of it.