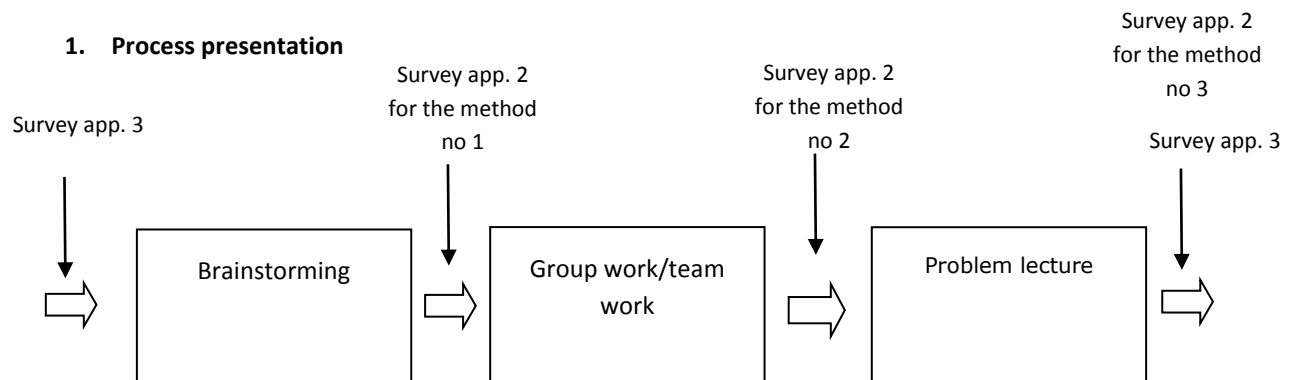




SHEET OF A MODEL OF FIFTH PROCESS OF DEVELOPING TRANSVERSAL SKILLS AS PART OF PRACTICAL TRAINING

I.	No. of intellectual work result	O5	II.	Testing period	01 April 2017- 31 October2017
III.	Partner conducting testing		Czestochowa University of Technology - CUT		



Picture 1. Application of the practical training methods in the 1 CUT process.

No the method in the process	Name of practical teaching method	Quartile	Rank of the method in matrix	Entrepreneurship	Creativity	Communicativeness	Team-work	Group of methods	Impact of the method on 4 transversal competences
1.	Brainstorming	I	3	0,97	1,25	0,96	0,94	Problem-solving methods	4,11
2.	Group work/team work	I	15	0,65	0,68	1,02	1,26	Problem-solving methods/ Activating methods	3,60
3.	Problem lecture	III	52	0,70	0,75	0,58	0,59	Problem-solving methods	2,62



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

Methods	Analysis
<p>Brainstorming</p>	<p>1) Brainstorming is one of the heuristic methods. These are methods of creative problem solving. The goal o brainstorming is to improve group decisions, frequently used as a form of a didactic discussion or one of the teaching methods. It is included into activating methods in the sub-group of problem methods.</p> <p>It engages all the participants, providing each of them with an opportunity to express themselves freely. This method consist in the possibility of quick accumulation of numerous, differentiated solutions to the assigned problem in a short time. This method stimulates creative thinking of the participants. Particularly important here is moving away from patterns and using experience coming from different domains, even if they do not seem related to the problem domain at first sight.</p> <p>Brainstorming can be easily applied and preparing it does not take much time. The moderator prepares a problem to be solved (e.g. in the form of a question). This has to be an open problem, that is the one that can be solved in numerous ways. The moderator should make sure that participants have understood the problem.</p> <p>There are numerous modifications to the original brainstorming, for example the Philips 66 technique, 635 technique, where the participants are divided into smaller groups or even work individually in the initial stage. Then, the results of their work are compared. Success of this method depends on the activeness of the whole group.</p> <p>Brainstorming includes the three stages:</p> <ol style="list-style-type: none"> I. Preparation/Introduction II. Session of ideas/Collecting ideas III. Analyzing and evaluating ideas <p>In the didactic process brainstorming apart being applied to solve various problems can also constitute a method of developing creativity, communicativeness and cooperation within the group. Therefore, it is important to use this method while working with students. It can be applied for various classes, lectures, laboratories and project work, as application of this method fosters the ability of creative thinking and behaviour.</p> <p>At the Czestochowa University of Technology this method is used during classes at the 1st and 2nd level of full-time studies and extramural studies, in various courses. Sample subjects that make use of this method include, among others: Management, Methods of Organization and Management, Sciences of Organization, Marketing, Organizational Behaviours, Basics of Management, Human Resources Management.</p> <p>This method is very popular and frequently applied by lecturers. As the results of the Report 01 show brainstorming is used in formal, informal and non-formal teaching. The results of the study shows that within formal teaching in subject classes the method is applied in 4,76% , laboratory classes 4,34% and project classes 14,7%. In informal teaching the use of brainstorming has been indicated by scientific associations and student organizations. In non-formal teaching this method is used during courses and trainings.</p> <p>Selecting this method is justified as it develops the ability of critical and creative thinking and application of problem methods in formal practical teaching enhances the cognitive processes through analyzing, explaining, evaluating, comparing and reasoning.</p> <p>2) The main goal of brainstorming is creative group problem solving thanks to generating various ideas. Thanks to this the method can be included into the group of methods that stimulate quick growth of transversal competencies.</p> <p>According to the conducted studies in the scope of the analysis of curriculums carried</p>



out at universities, and also considering the opinions of employers (Report O1, O2, O3) it can be stated that this method can be used primarily to shape skills within the four competences such as: creativity, entrepreneurship, communicativeness and group cooperation.

The session participants include:

1. The moderator who runs the session and makes ongoing records of the session (there can be two moderators as well)
2. Stakeholders: the student group divided into three test groups

Information indispensable to run the brainstorming session includes:

- List of session participants
- Guidelines to perform the task.
- Rules of conducting the brainstorming.
- Detailed description of the problem.
- Ways of introducing the ideas.
- Evaluation system and rules of submitting marks.
- Interpretation and evaluation rules.

Logistics support for the session:

- A4 paper sheets for each of the participants,
- Marker pens or pens for each of the participants,
- Board or a possibility to use walls to stick sheets with ideas on them

The moderator conducting the session controls that the determined rules are adhered to.

The course of the brainstorming session and reducing the set of ideas:

- After the introduction made by the moderator the students indicate the largest possible number of ideas applying the determined rules and principles.
- Break – after the students run out of ideas.
- Session participants analyze the distinguished ideas. They analyze their advantages, disadvantages and the possibility of practical application. If the same idea (defined differently) appears on two sheets, they have to be joined on the board.
- Browsing the set of indicated ideas in the order indicated by the moderator and presenting on the board the actions written on the sheets of paper, the lecturer asks the group which ideas should be rejected as they are redundant, improbable, unrealistic or impossible to implement. Rejection takes place in the course of the common discussion, only if all the participant agree to this.
- Evaluation and selecting the optimum solution.

The second variant in the scope of optimum solution selection:

- Each session participant (apart from the moderators) are granted five votes at their disposal.
- Each session participant has to implicitly and freely divide all votes among the ideas.
- The moderator collects the results of the voting, counts them and segregates them according to the number of votes the ideas were given, creating an ordered set of ideas.
- Optimum solution is being made.

3) The method will be applied within the subject "Methods of Organization and Management" in the group of 1st degree students of full-time studies at the



Management Faculty in the 4th semester. The subject is carried out within 30 hours of lectures and 15 hours of laboratory classes.

The task is planned to be carried out within 3 academic hours, each of them 45 minutes long (a one week break between meetings is advisable). Additionally, 30 minutes is foreseen for presenting information in the scope of carrying out the project.

Introduction into the subject matter of project implementation will consist in indicating the importance of actions connected with the process of developing transversal competences within practical teaching. Students will be acquainted with the description of competences and skills connected with creativity, entrepreneurship, communicativeness and teamwork. Students will learn what transversal competences are and how important it is to combine the need of teaching skills at a higher level with the needs of employers in the labour market. Research tools used in the project will be discussed in the further part.

Due to the necessity to evaluate the level of competences before and after the tested process has been carried out, with the use of selected practical teaching methods, the whole process of developing transversal competences will be discussed and the methods applied in it will be indicated. This will make students aware of the importance of the performed actions, the necessity to adjust the teaching process to the needs coming from the labour market, and also the possibility of disseminating the elaborated model.

Session duration:

1. Introduction – selecting a proper number of students, discussing the principles of the session by the moderator, discussing the problem - up to 45 minutes.
2. Generating ideas (according to the given topic) - until student run out of ideas, in practice no longer than 45 minutes.
3. Another meeting during which the moderator consolidates the lists generated during the session of ideas, dividing them into categories - up to 15 minutes.
4. Reducing ideas and assigning them priorities - about 30 minutes.

The course of brainstorming:

I. Preparation/Introduction

The first step is the selection of the proper number of participants, choosing the moderator/leader and the person to record the ideas. The task of the leader is to organize and run the session. The moderator prepares the participants to understand the problem that they are supposed to solve (through e.g. lecture, talk, working with text).

Time and place of the session have to be specified. The moderator communicates the group rules of work, indicates the necessary materials, explains the doubts that the participants may have with relation to the rules and problem which is the subject of the meeting.

The task of the moderator is also to acquaint the students with the rules of brainstorming. The following rules should be stressed:

- each participant can propose any number of ideas,
- all ideas are recorded, they should be written on the board of paper sheets,
- quantity not the quality of ideas is important, as the growth in their number is accompanied by the possibility of finding the best one,
- ideas cannot be evaluated by anyone, criticized and commented on, therefore what is often emphasized is unconstrained imagination, thanks to which the proposed ideas are extravagant, original and innovative, they will be subject to criticism in the next period, during the evaluating session,



- advantages and disadvantages of ideas cannot be indicated in the session of identifying the ideas,
- it is allowed to make use of the ideas proposed earlier, change or develop them, improve other ideas in order to arrive at new, better solutions,
- names of the authors of ideas are not recorded,
- ideas can be boldest and most ridiculous, all ideas are equally important,
- the right to speak is granted by the session leader, side talks are not allowed,
- attention should be paid that none of the participants dominates the discussion, and that everyone has an occasion to speak,
- tendencies of the participants to change the topic to not concerning the discussion should be eliminated,
- cases of leaving the session by the participants in the course of its duration should be limited to an absolute minimum,
- persons evaluating the ideas should be open to new ideas.

Next the teacher writes on the board the problem that is going to be the subject of brainstorming.

The proposed topics and problem situations:

- organizing an integration event for the employees and their families - things that have to be proposed include: place, time and attractions of such an event;
- organizing a conference for students - things that have to be proposed include: form, topic and place of conference;
- a transportation company which offers transport services records a decrease in the number of clients. The Management Board has decided to take all necessary steps in order to improve the quality of services in the company which transports people all over Europe. You are asked to propose novelties/innovations which would improve the quality of time spent while travelling on company's coaches.

II. Ingenuity session/Collecting ideas

Students are encouraged to freely submit the ideas to solve the presented problem. They submit ideas, which the moderator or the appointed person records on the board. The will to submit an idea is signalled with rising a hand. The right to speak is granted by the moderator according to the order of the signals. Each time only one idea can be submitted, which is meant to prevent the situation when only more ingenious students speak, at the expense of the others. In case when the process of submitting the ideas comes to a standstill the moderator can ask guiding questions (using a special list of guiding questions), encouraging the participants to submit combinations of previously submitted ideas or to develop them. The moderator can all the time ask questions that activate the students. At the end of the session the moderator encourages the participants to submit final ideas. The session last 30-45 minutes. Its end is determined by a significant decrease in the number of submitted ideas or the moderator's decision that the collected material is comprehensive and allows to solve the problem.

III. Analysis and evaluating the ideas

Evaluation of the ideas takes place after all the proposals are submitted. The participants should group similar ideas into the relevant categories. Then, each solution is being discussed and evaluated. The participants together with the moderator select most accurate solutions to the problem and justify their opinion. The best solution can be put into practice and assessed with regard to its effectiveness.

Brainstorming can be conducted in one team, which in the initial stage submits the



	<p>ideas and in the final stage evaluates them, or two teams: the ingenuity team and the evaluation team.</p> <p>The final stage will include a survey which will evaluate particular competences growth and a discussion on this method efficiency and the possibility of its application to solve educational, professional and social problems. Conclusions will be presented, which result from this method application in the scope of transversal competences growth as well as the possibility of other teaching methods application.</p>
<p>Group work/team work</p>	<p>1) Different methods of work are applied in the teaching process, appropriate didactic resources are selected as well as an appropriate form of students work. One of the problem methods activating students to act is group work. It develops transversal competences concerning entrepreneurship, creativity, cooperation within the group and communicativeness.</p> <p>Group work can be defined as systematized, purposely oriented problem solving process, preparing and agreeing on the position (making decisions, based on dialogue or discussion and carried out according to heuristic principles).</p> <p>The goal of group work is to identify the differences of individual students and also shaping their knowledge, general abilities (among others, the ability to cooperate in a group, ability to communicate, critical thinking ability), attitudes as well as learning one from another and combining the abilities of particular students while carrying out a particular task.</p> <p>2) A group is a set of individuals subordinate to common goals and able to cooperate together. The group is not just a sum of particular individuals - the group offers grater possibilities and creates a totally new quality. Particular individuals in the group change their behaviour and act differently than they would being alone. Selection of the group depends on the type of task that is to be performed, but best results are achieved by small groups (4,5 persons), of mixed sexes.</p> <p>Group work is characterized primarily by cooperation of task performers - cooperation, helping one another, advice, fulfilling various functions and also joint responsibility for the results of the work.</p> <p>It consists in suggesting ideas by particular group members, developing them and then implementing them while carrying out the assigned task.</p> <p>An important advantage of group work is an increase of knowledge and experiences within the group. This form of activeness provides activating stimuli and facilitates socialization of the group participants.</p> <p>Group work can take two forms:</p> <ul style="list-style-type: none"> • homogenous group work consists in performing the same tasks at the same time by all the groups and then comparing the results of their work; • heterogeneous group work consists in performing by groups different tasks at the same time, which constitute a certain whole, and then presenting the obtained results to everybody. The role of the teacher should refer to making the work of the group effective. <p>A significant stress while applying this method should be put on multidimensional communication within the group. Members of the group communicate with the teacher, and also with other members of the group, which makes it easier to agree on the</p>



	<p>position or deepens the relationships within the group.</p> <p>At the Management Faculty of the Czestochowa University of Technology this method is applied in classes both at the 1st and 2nd level of full-time and extramural courses of different fields of studies. Sample subjects carried out with the use of this method include: Management, Methods of Organization and Management, Sciences of Organization, Marketing, Organizational Behaviours, Basics of Management, Human Resources Management.</p> <p>3) Application of activating teaching methods requires the teacher to possess ingenuity, increased interest in the teaching process as well as additional preparation to classes. Their application in the teaching process results in enhancing competences in the scope of communicativeness, creativity, entrepreneurship and strengthening the relationships in the course of group work. These methods also develop abilities of students in the scope of independent problem solving and applying the acquired knowledge in practice.</p> <p>The goal of running classes with the use of the group work method is to develop the ability to cooperate, make decisions, encourage the students to be creative while solving problems, satisfy the needs connected with cognitive activeness as well as social and emotional ones and integrate the group and activate its members to creative and entrepreneur activity.</p> <p>4) Working within a group requires division of tasks and responsibilities. Each of the members receives from the teacher tasks to perform, being responsible for them. Groups perform work fast, more efficiently thanks to the support provide by other members of the group. Group work is an opportunity to widen ones competences and knowledge, using the experiences and skills of the other group members.</p> <p>Group work can be effective for tasks were greater creativity is required, as activities used within its confines, e.g. brainstorming, allow to arrive at better solutions, verify ideas, reject the poor ones or unrealistic, leaving only the best ones.</p> <p>In the course of group work attention has to be paid to the fact whether it does not contain individualists who do not like cooperation, who do not like sharing their ideas and experience with the other group members. In such a case the teacher can assign them more independent responsibilities, which do not require close cooperation with other persons in the group.</p> <p>Before the work is started, the group leader should be appointed, considering this person's strong personality and competences. This should not rather be done in the way of democratic election. Also the rules and principles of working in the group should be determined. Efficiency is another important issue.</p> <p>Characteristic features of efficient groups:</p> <ul style="list-style-type: none">• Free, unconstrained by any means atmosphere, commitment of the group members.• Lively discussion among all the group members, without departing from the subject.• All the members understand the task they are supposed to perform and cooperate one with another.
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	<ul style="list-style-type: none"> • Group members listen to one another and each idea is listened to and analyzed, they negotiate and make common decisions. • Speaking honestly their opinions with reference to the performed task. • Differences in opinions can occur and as a consequence the group can change the way of acting. • Mutual help in the course of operations, complementing one another. • The role of the leader is taken by different persons. • The awareness of performing tasks correctly, defining progress and barriers. • Following the accepted rules. <p>Important aspects of group work include partner interpersonal relationships, equal rights to participate in the work of the group, considering various beliefs and ideas and arriving at the accepted by all the members, realistic solution. It requires that the equality of rights while submitting the ideas is maintained and assumes mutual responsibility for decisions that have been made.</p> <p>Rules of group work:</p> <ul style="list-style-type: none"> • The most important aspect of group work is communication and respect for other group members, their work and also time that has been assigned to perform the task. Work on the task should start and finish at specified hours. • Each member of the group has to know the scope of assigned responsibilities. • Each student should be assigned a role to perform (e.g. leader/organizer, reporter, secretary/recording clerk, summarizing person, time supervisor, person to contact the lecturer or other groups, etc.) • Each member of the team should actively participate in performing the task and also do their best to perform it correctly, and if required ask for help and help the others. • It is important to appreciate the skills of other persons and listen to them carefully. Constructive and polite criticism is important, it is not allowed to mock other persons' ideas or insult the way of work or thinking of other team members. • Apart from efficient communication another important issues are commitment and motivation to work and define precisely the scope of responsibilities of particular persons and the deadlines for performing the tasks. <p>The application of group work will facilitate the growth of transversal competences mainly connected with cooperation within the group, creativity and communicativeness of the students.</p> <p>3) The method will be applied within the subject "Organization and management methods" in the group of students at the 1st level of full-time studies, at the</p>
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Management Faculty, sem. 4, (subject is carried out within 30 hours of lectures and 15 hours of classes).

Stages of group work in the classes:

I Introduction - the teacher divides the students into groups, formulates goals of work, indicates the ways of achieving them. He does not limit the ingenuity of the students, instead tries to guide them to search for individual ways of achieving the set goals. The teacher assigns particular tasks.

II Action - students supported by the teacher work in groups according to the assigned task following the accepted plan and division of work and responsibilities.

III Summary - this should concern acquired information and efficiency and presenting the results of group work. Remarks can be written on result sheets and then discussed with the students with reference to what new experiences they have gained and what results of work they have obtained, and so on.

IV Group evaluation - students present and discuss the results of their work and also evaluate the completed tasks. They evaluate the quality of work, verify whether they completed the task successfully and whether they achieved goals set by the teacher. Students evaluate which stages of work have been completed in a better way than it was assumed and which require improvement. They discuss the reasons of success or failure.

V Individual evaluation - each of the students individually evaluates their participation in the group work, their weaknesses and strengths and the level of mastering skills and competences necessary to complete the task, with particular stress on transversal competences.

All newly acquired experiences and conclusions can be used to perform a similar task in the future. While analyzing particular stages of the performed task one can validate the usefulness of introduced changes, which will allow to conduct further evaluations. In this way teaching can acquire cyclical nature.

While applying activating methods in the form of group work the teacher should:

- determine the goal of classes in the way which is clear for the students,
- determine the task/problem to solve, and then make sure that all the students understood provided information,
- provide necessary materials for classes,
- use different methods to activate students, strengthen the responsibility and self-discipline, take care of proper pace of work,
- when the classes are finished summarize and evaluate them, f

Meeting: duration: 2 x 45 minutes, additional 30 minutes is the time for preparing and finishing the task:

- the teacher divides the students into groups,
- presents the task to students, indicates its goal, way of performing it and summary and evaluation of obtained results.



- presents the instruction how to work and rules of working in the group,
- determines, that expects students to discuss, communicate, search for creative and ingenious solutions, improve the solutions, exchange experiences, entrepreneurship, solve problems that occur in the course of the task, cooperation within the team,
- distributes materials necessary to perform the task,
- determines the time of carrying out the task,
- within the accepted roles and closely related to them competences students undertake to perform the task together,
- the teacher observes the students and shares with them the results of the observations,
- discussing the performed task and evaluation of student work,
- the teacher summarizes the work of all groups.

Proposed tasks for students carried out within group work:

Teams of 5 students each must build the highest possible, stand-alone construction. Time foreseen for work after discussing the rules and handing out materials is 18 minutes. A foam has to be placed at the top of the tower. Minimum height which is enough for completing the task successfully is 50 cm. The team with the highest construction wins in the task.

Necessary materials:

- 20 pieces of uncooked spaghetti,
- 1 metre of masking tape,
- 1 metre of thread,
- 1 foam Marshmallow.

The following elements should influence the evaluation: correct cooperation, pace of team work, way of presenting and discussing the result in front of the whole group. While conducting the summary advantages of group work should be kept in mind.

This task is carried out with the use of the extremely cognitively activating method, which has a strong impact on the imagination of the group members and influences the growth of transversal competences through experience. In the course of the task the students acquire the skill of cooperating within the group, they like other group members and trust them, know that when necessary they will receive due support. They participate in common activities and are satisfied with fulfilled roles, having the feeling of being a part of the group.

The advantages of applying group work include a better diagnosis of the problem situation, arriving at and agreeing on the acceptable and best solution and also



	<p>acquiring new or extending the existing competences by the group members, in this transversal competences.</p> <p>Group work motivates the team members to act, as their individual participation increases the work efficiency of the whole group. It teaches cooperation, respecting the accepted principles and discipline and allows to feel shared responsibility. It also enables to improve communicative competences through expressing one's opinion, listening to other students, exchanging experiences in the course of common work. It also facilitates activation and has an inspiring effect on the other team members.</p> <p>A very frequently occurring in the course of group problem solving element is confrontation of various opinions, as a result of which cognitive activeness of students is promoted, which as a consequence leads to new ways of thinking, in this arguing, explaining, formulating thoughts and acting. Positive results of group work is also developing the feeling of unity and cooperation with the team, which inhibits the development of individual competition.</p> <p>Thus, group work teaches the skill of communicating and cooperating, it allows to develop skills and competences, teaches to follow the accepted rules, helps to become responsible for one's decisions, provides an opportunity to learn from the others, increases the commitment and motivation for work and also encourages to an open discussion and undertake new tasks.</p>
Problem lecture	<p>1) Practical methods refer not only to practical activities connected with practical job teaching, but also theoretical vocational and comprehensive subjects, which include contents of practical nature.</p> <p>Lecture belongs to the group of presentation methods, that is methods of assimilating knowledge based primarily on cognitive activeness of reproductive nature.</p> <p>Lecture is one of the most frequently used and one of the simplest (both for the listeners and the teacher) teaching methods applied in higher education in which the person passing the knowledge conducts an extensive speech on a given topic.</p> <p>Students can independently and voluntarily take notes in the course of the lecture.</p> <p>It consists in direct or indirect conveying messages to the target audience in the form of ready knowledge taking into consideration terminology characteristic of the given science.</p> <p>It requires the listeners to memorize a large amount of information, as well as possessing significant mental maturity and understanding the cause and result dependencies. Apart from the substantive competence the lecturer should know how to relate the content of the lecture with real life and selects accurate and interesting examples. Students are usually just passive receivers. They do not even have to possess any previous experience in the scope of the issues discussed in the lecture.</p> <p>Problem lecture is a word-based method. It belongs to the group of problem methods, that is methods of independent acquisition of knowledge, based on creative cognitive activeness, which consists in solving problems. In contrast to the conventional lecture, where the content is presented by the lecturer in the form which is ready to memorize, the problem lecture reflects a scientific or practical problem.</p>



	<p>This method is often applied in formal teaching, but also in informal one (used by scientific associations, student organizations, as well as during conferences, symposiums or lectures of representatives of the world of science, politics and business) and non-formal one (courses, trainings). This method applied in the course of practical teaching allows for acquisition of extensive knowledge and its later use in professional practice.</p> <p>Practical methods are used to comprehensively develop skills and competences of effective functioning in real conditions of business activity. According to the elaborated within the project report differentiated shares of the practical teaching methods group in formal teaching has to be indicated. The percentage index of the distinguished method of practical teaching share (problem lecture) in formal teaching in subject classes amounts 30,95% with reference to all summarized types of classes.</p> <p>Problem lecture is applied in almost all subjects taught at the Czestochowa University of Technology.</p>
	<p>2) In the contemporary didactic system the selection of teaching methods depends on, among others: goals, didactic contents and tasks. Selection criteria of teaching methods are of guidelines, indicating main tendencies. However, limiting ourselves to one type of methods will not ensure good results of didactic work. Thus, another selected method is the problem lecture.</p> <p>Problem lecture is a good teaching method if there is a need to acquaint students with a particular domain, but also to present more detailed issues being a continuation of a previous lecture. Problem lecture is also successful in transferring knowledge in the form of a series of definitions, standards, regulations, formulas and procedures. However, this is not a satisfactory method to memorize well and understand issues being taught.</p> <p>It should be remembered that in order to consolidate knowledge in a given scope other methods will be more effective, as they require active participation of students in the classes rather than just passive acquisition of the transferred knowledge.</p> <p>The way in which a given subject is taught is most frequently a series of lectures in a given semester, which are thematically related and presenting discussed issues from different perspectives.</p> <p>In case of problem lecture the discussed issues may concern various grasps of the set problem, its history and ways of solving it and also detailed and full explanation of the given problem domain. It is applied when contents of the lecture are concentrated around certain problems.</p> <p>It is foreseen that problem lecture will be used mainly to develop skills connected with creativity and entrepreneurship.</p>
	<p>3) The method will be applied within the subject "Organization and management methods" in the group of students at the 1st level of full-time studies, at the Management Faculty, sem. 4, (subject is carried out within 30 hours of lectures and 15 hours of classes).</p> <p>Presented by the lecturer orally teaching contents should be systematized, presented</p>



in the form which is accessible for the students, being a logically coherent statement.

In the course of problem lecture the teacher indicates a particular problem and also directions and ways of solving it as well as the consequences resulting from this solution.

Problem lecture is characterized by maintaining a broader contact between the lecturer and students, which is reflected in careful, active following the lecture's reasoning and thinking concurrently with the teacher. The lecturer during the lecture expresses their thoughts, allowing students to participate in gathering incentives, follow his course of thinking: from understanding the nature of the problem to the moment of solving it.

While giving the lecture, the lecturer can also use visual aids, e.g. use a multimedia presentation, overhead projector, audiovisual materials or draw something on the board.

The last stage of the method is completed with students filling in the survey to evaluate the level of student transversal competences within the confines of practical teaching (attachment 3 to the instruction) and the questionnaire to measure the dynamism of changes in the evaluation of acquired transversal competences (level of changes) (attachment 2 to the instructions).

The survey participants will be all students participating in the tested practical teaching processes.

The final element will be a summary of all remarks, opinions and assessments indicated in the course of discussions during classes on the efficiency of the applied methods: brainstorming, group work and problem lecture. Possibilities of applying them to solve social, educational and professional problems will be indicated.

The part of the testing process will be employers who cooperate with the Czestochowa University of Technology on daily basis in the scope of adjusting the teaching effects, skills and competences acquired by the students in the given field in the context of needs which occur on the regional labour market. These employers will participate and observe students in the course of carrying out the tasks in the testing process.