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How to make a step towards future education. Teaching/learning methods in higher education for the 21st century

Abstract: The rapid development of the world requires new improvements in every field of life, and demands new knowledge and skills from each worker. The employers expects a workforce with a new set of skills. Higher education institutions need to change and reshape their current offer and provide a learning process through which people acquire the skills required by employers. In order to ensure such a learning process is successful, it is important to explore the vision of both sides – students and lecturers – and to offer a new, up-to-date innovative training process. It is important to offer up-to-date tools – methods to work within the learning process.

Students expect the training process to be motivating and engaging. Students demand that the learning process will successfully prepare them for the labour market. Lecturers focus on identifying new requirements and ways/methods to change their training process to ensure students' demands are met.

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In this article, we reflect on the research carried out under the "Entrance to future education" project (efe-project.eu). The aim of the project was to identify and compile training methods that meet the requirements of the 21st century. As part of the project, we studied how students and trainers assess workshops and lectures in which at least one of the favoured methods was used. The article also reflects on the assessment of training programmes for trainers regarding the learning of new teaching methods.

Keywords: learning methods, learning outcome, creativity, motivation, engagement, training

Introduction

The Entrance to Future Education (EFE) project is a two year project involving universities and organisations in Latvia, Poland and Belgium, supported by the European Commission's Erasmus+ programme. The main aim of the project is to develop and promote innovative methods and approaches to teaching in higher education.

The Entrance to Future Education project identifies the demands and needs of both sides – students and teachers – in order to achieve a successful learning outcome, as well as providing methods and training programmes to aid teachers. The final materials prepared within the project have been tested to assess their effectiveness to achieve the current targets set in the training process.

21st century education

We are two decades into the 21st century. The previous century was one of very rapid changes in technology, biology, medicine and the social sphere. Changes this century occur even more rapidly. Ken Robinson states that we live in a world that is changing faster than in the past, is unpredictable, and this is why creative skills need developing.[1] In the face of these changes, the model of education which positions the teacher as transmitting knowledge and the student as a receiver is unsustainable.

Because of the development of IT technology students nowadays have many sources of knowledge and permanent access to them. Mobile applications provide new ways of engaging with information. They are attractive to some students and intuitive, therefore easy to use.

That is why nowadays **transforming knowledge in a creative way** is going to be the key activity of the learning process and also a required feature of employees. Academic teaching is going to be replaced by the creative project, design thinking or flipped classroom.[2]

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[1] K. Robinson, *Out of Our Minds: Learning to be creative*, Capstone Publishing Ltd., Oxford 2011.
[2] Description of approaches and methods on the EFE project website: http://efe-project.eu/methods.

One approach is the creative project. The project method used to be a basic method of progressivism. Although its sources can be traced back to the 16th century in European Academies training architects, the development of the method occurred at the turn of the 19th and 20th centuries in the United States. The concept of the project was known to a leading American progressive, John Dewey, for whom it was associated with solving practical problems.[3]

The project method was defined by another progressive, Dewey's student, William Kilpatrick. According to him, we always deal with a project whenever a student takes some action for a specific purpose. Therefore, positive motivation was to be the decisive criterion for the project. Kilpatrick distinguished 4 project phases:

1) purpose
2) plan
3) conduct
4) evaluation.[4]

Today, the project method is defined as a method whereby a team of students initiates, plans and implements a certain undertaking on their own and assesses its implementation. When we talk about a creative project it is important to achieve some extraordinary outcome.

One of the most valuable aspects of this approach is that it is based on real-life challenges or problems. Students are expected to think of creative solutions to problems. It is also important to find some subjective outcomes – what we have achieved by this project for other people and for ourselves (efe-project.eu/methods/creative-project).

Another approach addressed to a particular vision of 21st century education is design-thinking.[5] In this approach a group first decides on the problem/product to be solved/designed. The aim of the design thinking approach applied in higher education is to obtain a balance between academic knowledge and practical relevance. Students design a solution to the problem outlined at the beginning of the course. The implementation of the solution is supposed to work and improve the situation.

In this approach, students try to find creative solutions to a specific problem or challenge. The main outcome is a specific solution/project/product addressing those (users) affected by this problem or challenge and considerably improving the situation. (efe-project.eu/methods/design-thinking).

[3] J. Dewey, *How we think*, Dover Pub inc, Mineola, New York 1997.

[4] M.S. Szymański, *O metodzie projektów*, Wydawnictwo Akademickie ŻAK, Warszawa, 2010.

[5] Por. np. T. Brown, *Change by design*, HarperBusiness, New York, 2009; N. Cross, *Design Thinking*, Berg Publishers, Oxford, New York, 2011; B. Michalska-Dominiak, P. Grocholiński, *Poradnik design thinking, czyli jak wykorzystać myślenie projektowe w biznesie*, Helion, Gliwice 2019.

Another approach 'flips' the classroom.[6] The flipped classroom idea means adapting what is done traditionally in the lecture – one way transmission of knowledge through lectures – and making the lecture content available to students to either watch or read in their own time and as preparation for the class. You then use face-to--face classroom time for active learning opportunities where the emphasis is on higher--order cognitive skills such as the skills of analysis, problem-solving and evaluation. Much of the supporting literature suggests that 'flipping' the classroom in this way supports deeper learning, is a better and more efficient use of increasingly dwindling resources and helps students achieve a far more comprehensive understanding of the subject matter.[7]

The new approaches need new methods. Those tested in EFE project were:
– Manifesto
– Role Play
– Brainstorming
– Simulation
– Interactive hunt
– Future Scenario Planning
– Petal Debate
– Storytelling
– Jigsaw
– Chalk Talk
– Draw Your Knowledge
– Speed Tutoring
– Colour, Symbol Image
– Circle of Viewpoints
– WebQuests
– Virtual Field Trip
– Ask an expert
– Word Webs
– Video catch-up
– Class wiki
– Virtual Exhibition
– Think-Aloud-Pair-Share
– Knowledge clips
– Documentary making
– Clustering
– What? So What? Now What?
– Tell and sell

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[6] C. Reidsema, L. Kavanagh, R. Hadgraft, N. Smith, *The Flipped Classroom. Practice and Practices in Higher Education*, Springer, Singapore 2017.

[7] efe-project.eu/methods/flipped-classroom.

   – Genealogy of an idea
   – 3-2-1 Processor
   – Translate it!
   – Leader as Coach.[8]

All the methods tested involve students' creativity and cooperation. Some of them have a strong visual component, some of them are connected with IT technology. All of the methods are to engage students into learning process.

Assessment of the use of training methods

As part of the project, there was a vocational training programme set for lecturers to present the methods gathered in the project and to provide fresh inspiration for the development of the study process. As a practical task within the programme, one of the proposed training methods was supposed to be selected and used in one of the lectures or seminars with students. The applied training programme and methods were tested by 29 lecturers from Latvia, 40 from Belgium and 17 from Poland. In total 21 methods were tested. The choice of methods was based on both the subject of the curriculum and the specific workshop or lecture.

Following the work carried out, both lecturers and students were asked during specific lectures/workshop to evaluate the lectures/workshop by completing a questionnaire. The aim of testing was to observe whether and how the methods collected in the project achieved the objectives, i.e. training methods should contribute to the motivation of students and their involvement in the learning process.

In general, 680 students from Latvia, Belgium and Poland participated in the survey.

At first, students were asked to assess the statement "The lesson/seminar was motivational." 95% of students indicated their agreement with this statement (see: Figure 1). 97% of students agreed with the statement that "The lecture/seminar was engaging and interesting" (see: Figure 2).
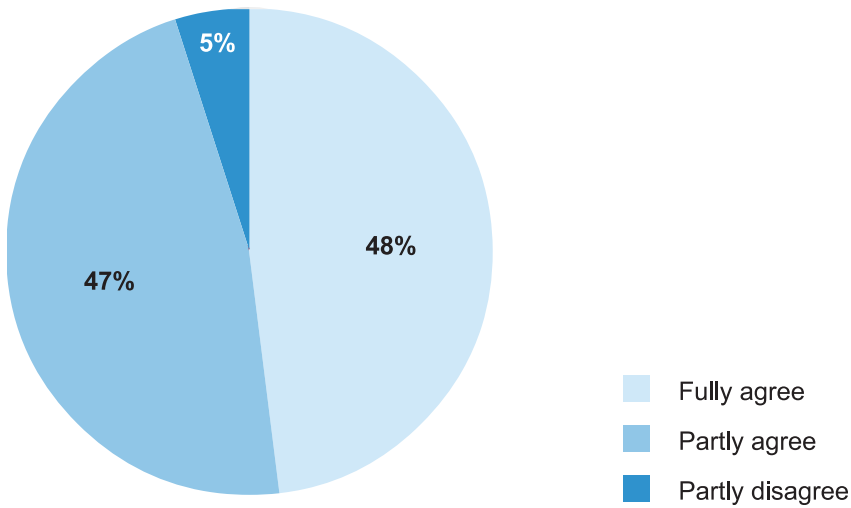

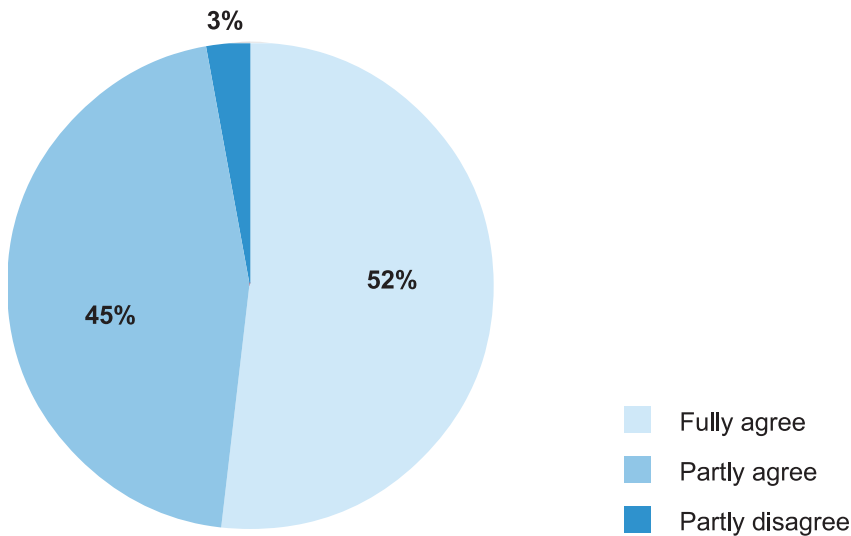[8] http://efe-project.eu/methods.

Figure 1

Figure 2

The result allows us to conclude that, in general, the training methods used by our lecturers achieved the objective pursued by the project team: creating a motivational and inclusive learning environment in the process of acquiring the necessary skills.

A clear understanding of the students' tasks during lectures/seminars is an essential element in motivation and engagement. The methods collected include both relatively simpler tasks and more sophisticated job settings. It also differs if a task requires a student to prepare outside the lecture time. 92% of the students surveyed indicated that it was easy to see what was expected of them during the lesson – "I understood clearly what was expected from me during this lesson" (see: Figure 3). More than half

of the respondents fully agree with this statement, while 39% partly agree with the statement. This suggests that sometimes students have to make an effort to understand the task, or sometimes (based on student comments) the meaning of the task becomes clearer during the performance of the task. It should be noted that in this process the ability of the teacher to explain the task accurately and comprehensively is also very important. In general, student judgement allows us to think that both the methods used, and the explanations provided by the teaching staff make it easy to understand the tasks that have been set during the lesson.

Figure 3

Slightly different from previous data are the students' assessments of the statement "All students participated fully during this lesson" (see: Figure 4). ¼ share does not agree with this statement, while some 1/3 of the students surveyed partly agree.
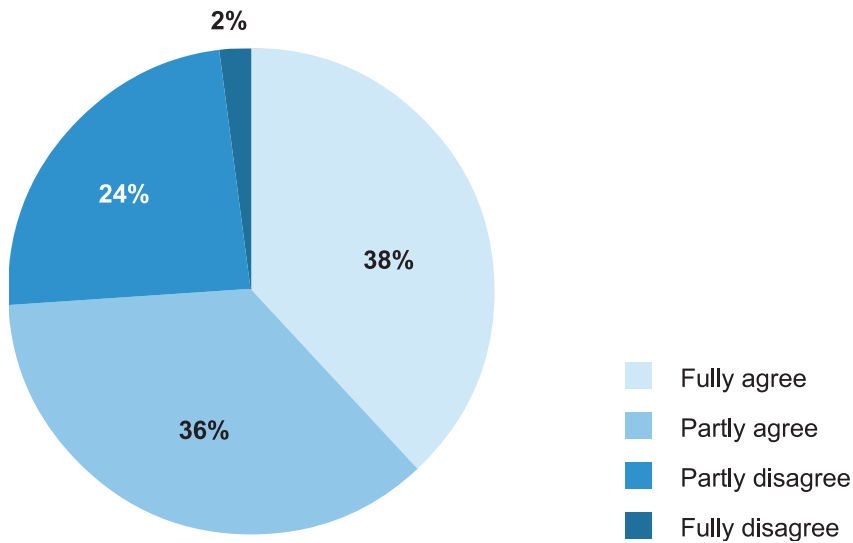
Figure 4

However, if we compare this data with the "engagement" rating during the lesson – see Figures 1 and 2, we can conclude that a relatively lower student participation rating does not mean low motivation and engagement in the process. This leads to the conclusion that the active involvement of a relatively smaller student interaction in the process, more passive action – listening, watching, individual ongoing analysis and conclusions – also makes it possible to feel motivated and engaged in the overall learning process. From student comments we can see some students feel the benefits of lecturing, listening directly and watching the views of their classmates. This conclusion allows us to think that the methods collected and proposed in the project are generally motivating and engaging, even if the task does not necessarily involve each student in an active process.

We also asked the following question in the survey: "Please describe in your own words, what you enjoyed most during this lesson?" The students were happy to make their comments. In Figure 5, we can look at the comments that briefly describe the main ideas expressed in the comments: students highly valued collaborative opportunities, sharing ideas and hearing student ideas, encouraging creativity, the possibility of practising setting up, expressing and defending their opinions, the possibility of getting to know the material in an unusual way.
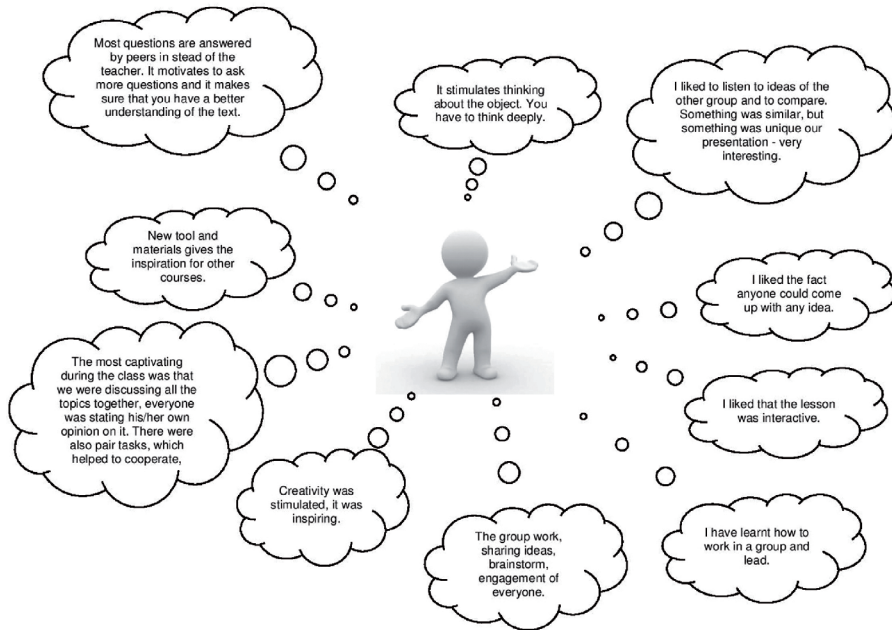
Figure 5

We also asked students to share their thoughts: "Please describe in your own words, what you found most valuable during this lesson." The answers, in part, were in line with answers to the previous question. However, some students distributed the benefits in a particular way. Figure 6 shows examples that reflect the ideas mentioned above.
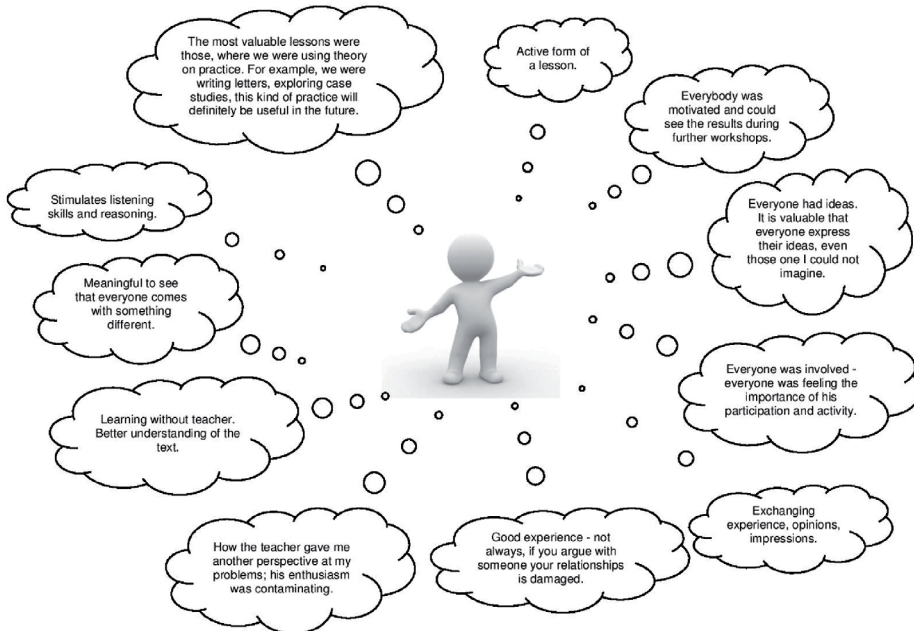
Figure 6

86 academics from Latvia, Belgium and Poland participated in the survey. We asked them to evaluate the same aspects that the students evaluated about the lectures/seminars where some specific method was used.

Almost everybody thought "Students were motivated during the lecture/seminar" – 98.8% lecturers agree with this statement (see: Figure 7).
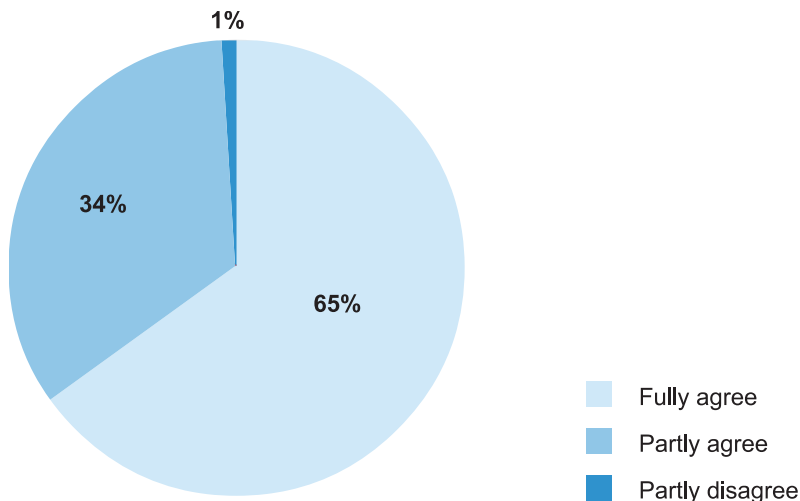

Figure 7

Everyone agrees that "Students were engaged in the process during the lecture/seminar" (see: Figure 8).
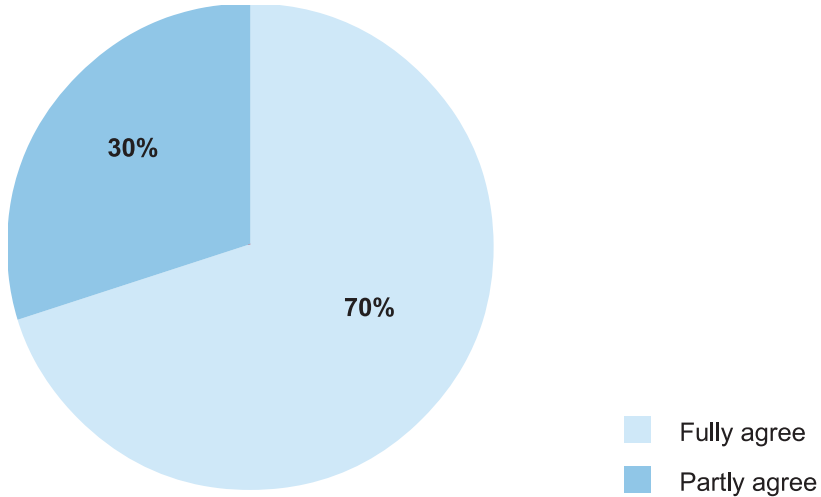
30%

70%

Fully agree
Partly agree

Figure 8

97.6% of lecturers observed – "Students did understand easily – what should be done during the lecture/seminar" (see: Figure 9).

2%

36%

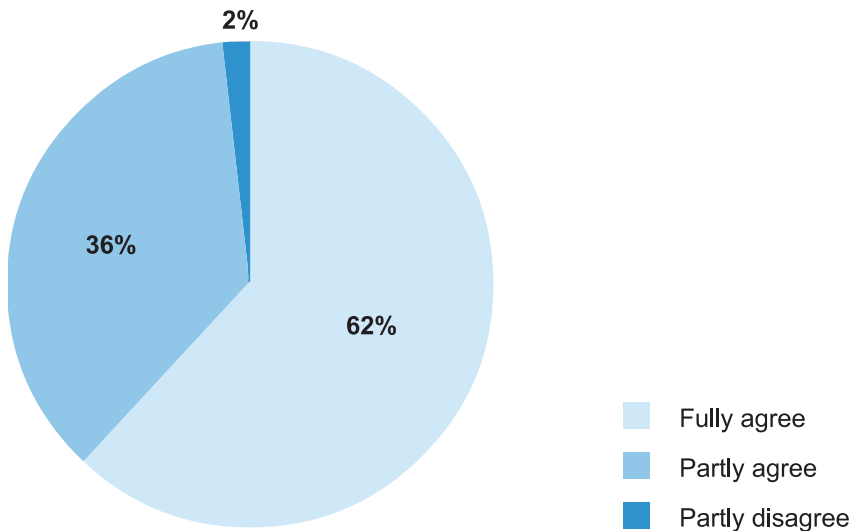62%

Fully agree
Partly agree
Partly disagree

Figure 9

94.1 % of lecturers agreed with the statement "Every student was involved in the learning process during the lecture/seminar": 5.3% partly disagreed (see: Figure 10).
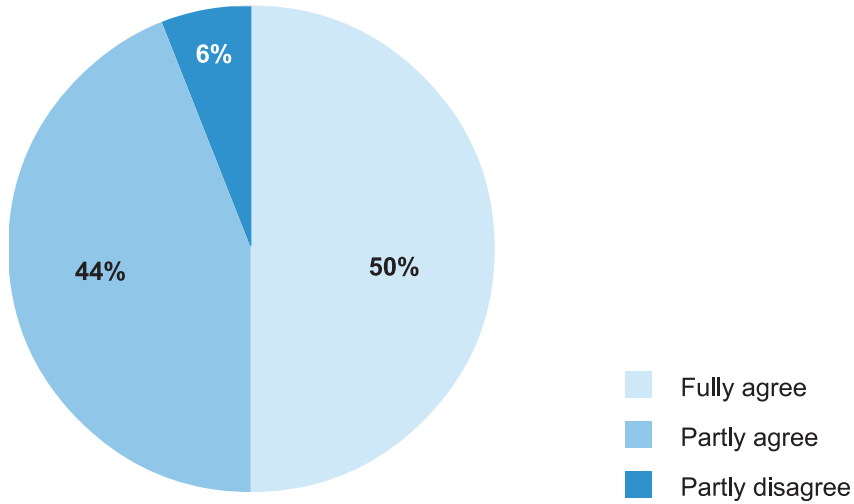
Figure 10

Lecturers admit that it is a challenge to ensure that every student is involved in the learning process. But we can also see that lecturers' answers parallel the answers of students: partial engagement in the learning process does not harm the process of being motivated during the learning process.

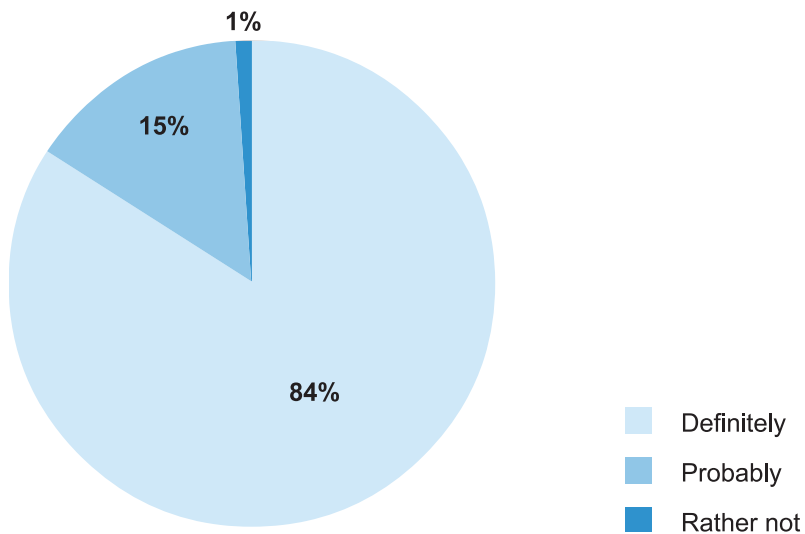All respondents were convinced – they wanted to work again with the tested method (see: Figure 11).

Figure 11

We asked lecturers also to be more specific about their experience and answer the question "What do you find the most valuable about this technique/method/approach? (regarding the used and evaluated method). There are several conclusions:

The methods demand quite extensive preparation from academics. Academics say sometimes it is necessary to use the method more than once to understand the best way to use it and that it is useful to talk to other lecturers about their experience with the method. At the same time, there are methods that are easy to use and simple.

Sometimes lecturers combine several methods or modify them according to the theme or the task of the course. Sometimes the methods are a good way to connect theory with practice. Lecturers admit that most of the methods develop thinking, creativity, communication skills and presentation skills, and teach how to work with information. The methods inspire lecturers to develop a broader skillset of teaching methods, be more creative and to improvise. Some of the students usually don't get involved. Lecturers positively evaluate the use of new technologies and digital tools during the teaching process. Quotes from the questionnaires (see: Figure 12).
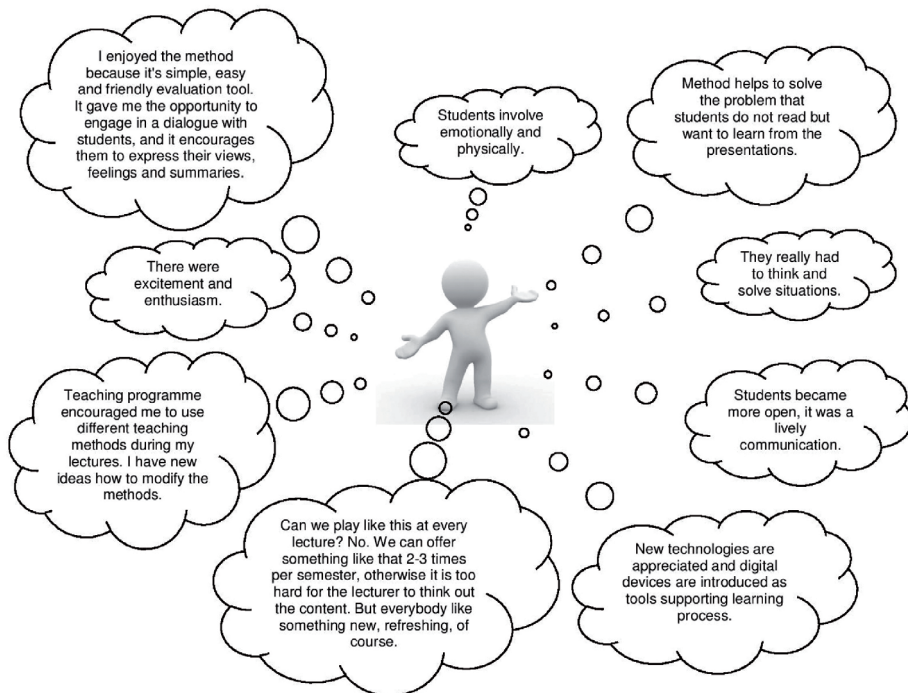
Figure 12

Evaluation of training programmes

Within the framework of the project there were training programmes for lecturers in Belgium, Poland and Latvia. Participants tested one or more methods collected in the project – including the training programme's practical task. We are planning to create training programmes as a regular training course offered for lecturers in all three countries.

The main goal of this training programme was to find an opportunity for lecturers to get to know new learning/teaching methods as well as to create a space for discussion about the innovations in learning/teaching and experience exchange.

We evaluated the training programmes and the experience obtained during the training process. The total number of respondents was 37: 9 teachers from Poland, 9 teachers from Belgium and 19 teachers from Latvia.

At first, we invited participants to evaluate the usefulness of this training programme on a scale from 1–10. "10" points means "very useful: much of what I have learned will be useful for further pedagogical work. "1" point means "it was not useful: I will not use anything of what I have learned'". The average total score received was 8. This assessment is considered to be high in order to assess overall the benefits of the programme as a significant benefit for the participants of the programme. We see, however, that there is a possibility to increase this score by enhancing satisfaction with the training programme. Therefore, we clarified the benefits and shortcomings of the programme in order to develop this learning programme in the future.

We asked lecturers about the benefits of the programme: what was your most valuable benefit in this training programme? A large number of lecturers admitted – it was an excellent opportunity to meet colleagues, share teaching/training experiences and to talk about the challenges in the work with students. The training programme gave lecturers an opportunity to talk about the ongoing changes in higher education institutions. Lecturers believe this important discussion is missing from their professional life. It is clear that lecturers also need support and to share experiences: it strengthens the lecturer's confidence as a trainer and opens up possibilities for change and transformation. The programme participants said it was valuable to be aware that other lecturers have similar challenges.

The second largest benefit was the range of methods proposed. It provided new ideas for working with students and new creative ideas for combining and transforming methods.

We asked training programme participants to share missing aspects of the programme: what would you change or add in this training programme? Many lecturers pointed out that they would like to have more workshops. They explained: the programme should be expanded. Lecturers would wish for the possibility to try out more methods together with colleagues during the training process. Several lecturers wished to meet their colleagues to share experience and listen to other colleagues'

conclusions. Meeting, sharing and discussing with colleagues from other disciplines opens many new perspectives, offers different angles. More meetings are necessary to reach all colleagues and discuss the new possibilities with them.

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http://efe-project.eu/.