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Erasmus+ KA2 strategic partnership project  
**“Effective International Partnership:  
Success for Every Student”**

## **“EFFECTIVE INTERNATIONAL PARTNERSHIP: SUCCESS FOR EVERY STUDENT”**

(Project number 2017-1-LT01-KA201-035254)

### **INTERIM RESULTS OF THE PROJECT IMPLEMENTATION**

**The aim of the project** is to consolidate the existing knowledge and on the international level to develop the teaching / learning tools for learners (3 - 18 year olds) and educators (teachers, parents), that would help develop a higher level of critical and creative thinking through experiential, playful teaching and learning techniques and application of digital technologies.

**The target group of the project:** pedagogical staff and pupils.

#### **General information**

Participants of the project, including Kaunas kindergarten “Giliukas”, Kaunas Panemune Primary School, Kaunas St. Kazimieras pro-gymnasium, Kaunas “Saules” gymnasium, Kocaeli Provincial Directorate of National Education (Turkey), Fitjar Vidaregaandeskule (Norway), RIIMC and some primary schools (Latvia), have shared project experience, conducted a survey, summarized data and success of project implementation.

The project develops educational tools for critical and creative thinking in education, that have been tested in partner schools in Lithuania (Kaunas), Turkey, Latvia and Norway; analyses

changes in pupils' progress and achievements, change in school attendance, attractiveness of educational tools developed within the framework of the project, application of critical and creative thinking methods and their acceptability to teachers.

It should be noted that, with the rapid change in technology and the society, facing a variety of opinions, attitudes, theories, different assessments and conflicting interpretations of the same facts are inevitable every day. Therefore, it causes difficulties for the child to make choices and decisions. At a preschool age, a child, or later a primary school pupil, has to deal with different assessments of the surrounding, educators, teachers, pupils / children, which are not always correct and therefore creates a sense of insecurity. At the age of adolescence, difficulties arise from the desire to belong to peers community and their influence, to learn to choose independently, to make decisions and to take responsibility for their decisions. The environment does not always help to become a mature person capable of making decisions. Therefore, today's child / young person must be able to think critically, not to be afraid to give reasoned opinions, and etc. A very responsible task for the teacher is to teach the child to make decisions, analyze and provide arguments. Hence, the main idea of the project was to develop and test methodological tools to help young people develop critical thinking, as today's society needs people who are critical, capable of communicating, understanding problems, making decisions and adapting to a new environments.

### **Relevance and novelty of the research**

Critical thinking is an important element of general education. It is one of the most important skills to educate a young person who is ready to live in a competitive society and is motivated by the success of life. Therefore, today, from the pre-school age, the teacher's task is to educate children in critical thinking, to enable teachers to improve their qualifications, to share their educational experiences, to develop new teaching products to help children develop critical thinking skills and creativity in the educational process.

Today, in Lithuania, different levels of institutions that are interested in and analyze development issues related to education as well as assess educational processes in schools claim the *problem of developing critical thinking skills* to be the major issue in the education process in order to achieve higher student learning outcomes, on personal, national and international scale

(ongoing international education research): IEA TIMSS, IEA PIRLS, IEA ICCS, OECD PISA, OECD TALIS, OECD PIAAC.

To develop critical thinking, teachers must use effective and innovative educational tools, develop teamwork skills and participate in projects. An educational institution must develop and maintain an environment and culture in which open and responsible communication and cooperation exist.

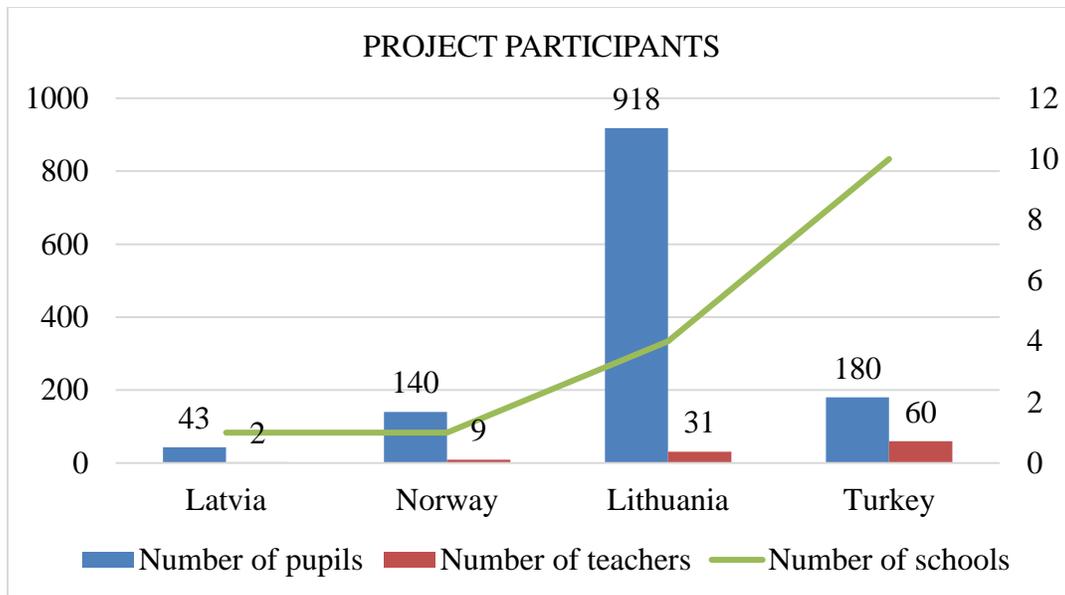
It should be noted that the literature on education of critical thinking is insufficient as well as textbooks or other methodological tools that could be used in dealing with children of different age. *Therefore, the aim of this study is to find out the interim results involving the ability of the project partners to prepare methodological material, implement it in the educational process, and observe the change of pupils' achievements, its benefit to the educational institution and the child personally.*

All project partners participated in the study to find out the interim results of the project. The number of pupils involved in project activities in Kaunas educational institutions: 40 kindergarten "Giliukas" pupils, 296 - Panemunė primary school pupils, 70 – pupils of St. of Kazimieras pro-gymnasium and 512 - students of "Saules" gymnasium. A total number of 918 pupils from 4 educational institutions. Training tools developed within the framework of the project have been tested by 31 teachers.

According to the Turkish partners, KOCAELI PROVINCIAL DIRECTORATE OF NACIONAL EDUCATION, 180 pupils and 60 teachers from 10 schools have been involved in the project activities

According to Riga RIIMC data, 43 pupils and 2 primary school teachers have participated in the project activities in Latvia.

According to the project partners FITJAR VIDAREGAANDESKULE, 9 teachers and 140 students have participated in the project activities.



In summary, 1281 pupils and 102 teachers participate in the project activities. According to the data of the survey, it can be said that since the beginning of the project, 100% of teachers involved in the project have conducted more than 4 creative / critical thinking sessions. In evaluating the use of creative critical thinking techniques, it can be said that 80% of the project participants have used established and known ways of developing critical thinking considering the age groups:

***The Mind Map*** technique has been most commonly used in lessons as a visual way of presenting and learning. According to the questionnaire, 100% of teachers involved in project activities use it in class. The teachers claim that it makes it easier to provide complex information, better memorize and understand the content of the educational material, find links between the individual objects for children of any age. In assessing the impact of this method on children's learning outcomes, individual progress (in terms of age groups), it must be concluded that mind maps are one of the most convenient ways to portray ideas or information. The respondents point out that pupils become more creative (75%), are able to solve problems more effectively, understand information more quickly, find links between educational subjects or play activities (90%).

***Problem based learning*** activities have been utilized by 100% of the educators. Problem-based learning is a learning strategy implemented by teachers by developing problem situations (100%) and organizing group and team work (86%). When problem schemes are

created, information is sought to develop problem-solving strategies and then students reflect on new experiences (100%).

The main form of learning used in pre-school education (Kindergarten "Giliukas") is a game whereby children take over the basic social, practical skills needed for day-to-day activities and communication. The games applied to preschool children are based on educational goals, children's experience and interests. Gaming activities involve children directly, so this is an effective learning strategy for preschoolers (100%). The pupils of primary and secondary schools learn to cooperate, improvise and create imaginary situations through the game. Therefore, game-based learning for both youngsters and teenagers is the simplest form of problem-based learning focusing on solving household and social situations.

Problem-based learning - unlike a conventional lesson - is focused on in-depth learning when the problem is analyzed until there are no uncertainties left and the key questions are answered: information that helps to understand the learning object and gain insights into the solution of the problem is found.

***Collaborative Learning.*** According to the respondents, passive listening is the worst form of learning. ***The best form of learning is peer teaching.*** 80 % of respondents / teachers say that in group work the focus is on sharing knowledge and thus highlight such key evaluation objects as providing useful insights, argumentation, positive criticism and active communication.

80 percent of the respondents state that in group work the best is not the one who knows most, but the one who is capable of sharing their insights and contributing most to the developing knowledge, insight and understanding of another student in a group. A child / pupil working as a team member becomes a mentor to someone who needs their knowledge and help. The work of such pupil in the group is rated higher than the one who is information recipient.

***Experiments based methods.*** Regarding data analysis (65%), it is such a creative research activity where the observation, assessment and analysis of artificially occurring phenomena are taking place. Norwegian teachers (Fitjar Vidaregaandeskule), involved in the project, recognize experiment-based learning as one of the most successful approaches to developing critical thinking in education. According to the teachers applying experimental method in the lessons, the combination of the two research methods - observation and experimentation - brings students together into independent work with information sources.

Students then must compare the results obtained with the results of the textbook, study deeper the other material and finally present their creative work in the form of a report or presentation. Commonly, the school carries out simple research (observations, tests, experiments), and the following sequence of actions allows students to try the way researchers go: to raise questions (formulate hypotheses), use a variety of research tools, repeat the research and re-verify its results. 70% of teachers involved in the project activities indicated that research-based education teaches to formulate problems, search and find solutions, analyze data, understand performance and be responsible for them.

Observations, tests and experiments not only provide knowledge about various branches of science, but also help the students to reveal themselves, form their scientific mindset and research work skills. 100% of respondents maintain that scientific thinking related to logical expression of ideas, ability to explain, argue and prove, as well as creative thinking - *is needed by all children*.

*Gaming elements* applied with pre-school and junior school-age pupils (60% of respondents) have proved to be effective. The purpose of using this method is to teach children critically evaluate the current situation of life, to raise problems (domestic, global, etc.) and to find ways to solve them successfully.

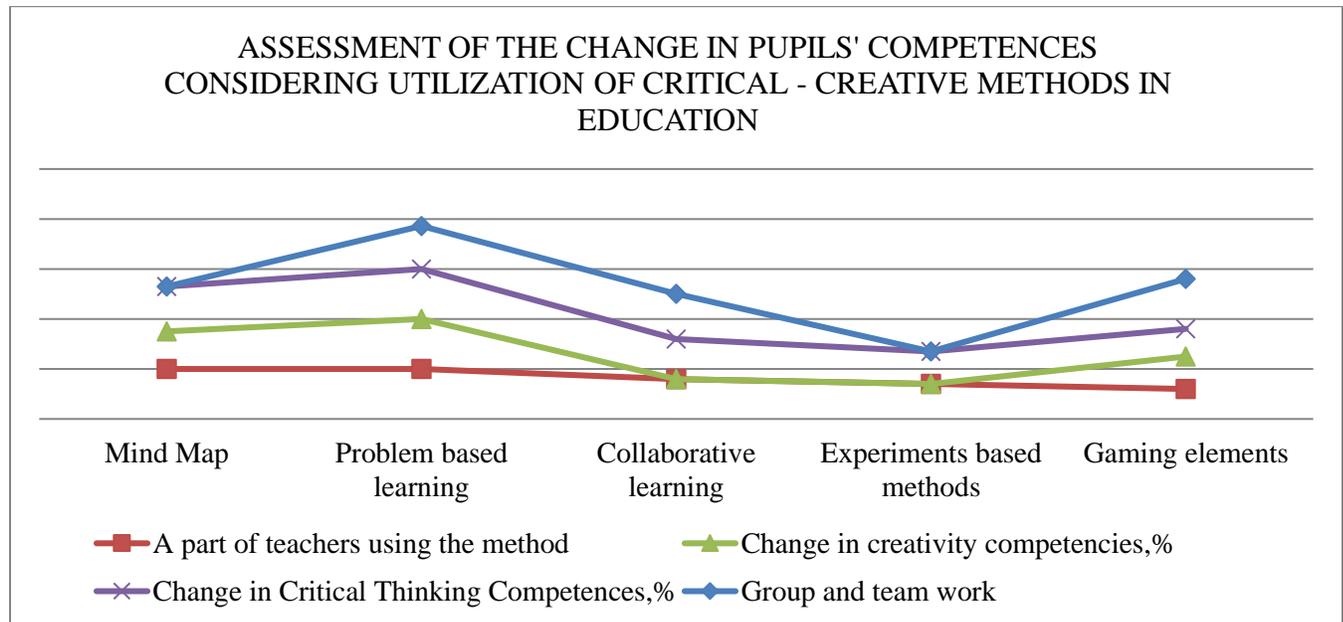
By organizing education in this way, children's autonomy and responsibility for real life situations are developed. This method applies to all subjects. Teachers teaching pre-school and junior school children say that the teacher and the pupils must think carefully about the situational game:

1. Analysis of a current situation;
2. Raising the problem and its formulation;
3. Possible ways of solving the problem via looking for more efficient and economical ways of solving it;
4. Problem solving (will depend on many facts);
5. Project presentation and defense of the solutions.

Situational games are organized by teachers in groups and individually. The teacher prepares tools, literature, environment, provides additional material, information sources, access to ICT, etc. Children prepare a package of ideas, i.e. real ways for problem solving. They can also produce charts, tables and diagrams (depending on the age group).

Then, they present their project and defend it while others argue or deny the ideas of the project with reasoning. It should be kept in mind that when applying non-conventional education method some time for reflection should be left.

**Other methods.** Creative teaching methods range from toys to problems, from words to creative tasks, from questioning to discussion and to solving problems independently.



### **Educational innovations implemented during the period of the project**

Educational innovations implemented by project partners in their educational institutions during the project period:

- A more commonly used mind map in pre-school and small child classes. It is noteworthy that children have learned how to prepare and ask "Hot Questions", which has improved the thinking skills of young children.
- Teachers in primary and secondary schools use many different technologies in the educational process: they include various blogs, e-mails and e-platforms, as well as other information technology. It has resulted in improved pupils' achievements, STEAM education and Lego robotics applied on daily basis, which gives great results in today's education.

- Senior schoolchildren are subjected to nature and science education methodologies by integrating foreign languages, critical and creative thinking sessions where they are taught to obtain the information, argue, formulate statements, distinguish between facts and opinions. Learning in co-operation, conducting classes in unconventional environments and in different ways such as university labs, classrooms, bookstores, museums, art galleries and countryside, have become topical. Technological innovations such as the integration of 3 D objects into sciences are also used to develop critical and creative thinking. In this way, conventional and non-traditional environments are combined.
- Foreign partners (Turkey and Latvia) identify the importance of practical and social impact, the integration of design into the curriculum and the impact on student achievement. Learning in non-traditional environments, peer-teaching and collaborating, help students to achieve set goals and to improve academic achievement.
- Attention should be paid to the activities of the partners from the Norwegian school - from the beginning of the project they focused on the methodology of the thinking school. In developing creative and critical thinking as a priority, partners consider learning to be collaborative.

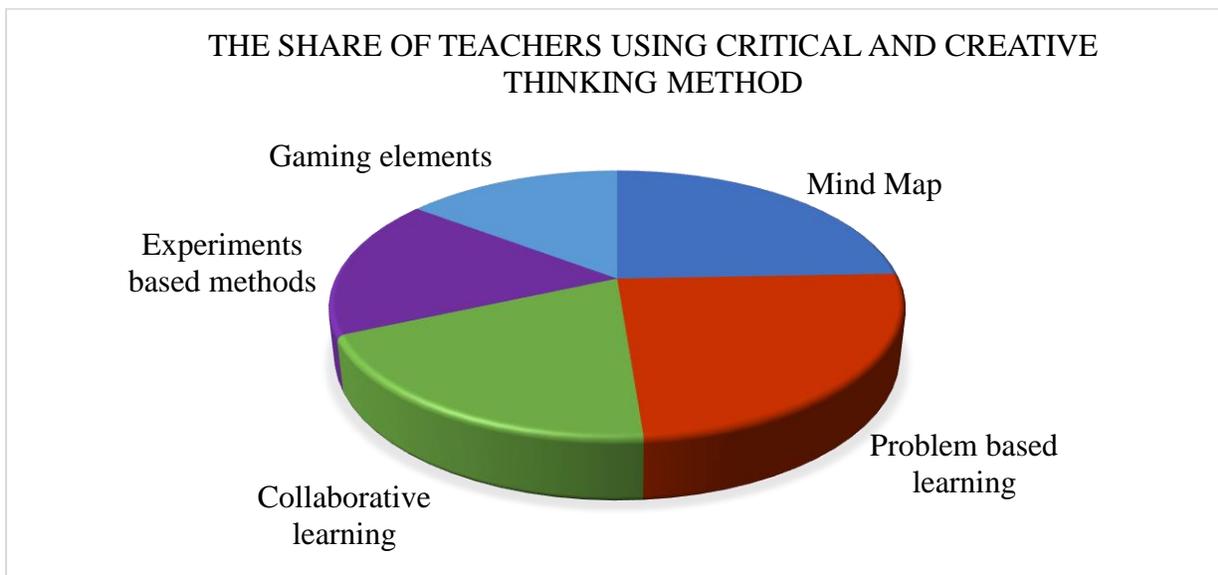
### **Examples of interdisciplinary integration when combining different educational activities**

Examples of interdisciplinary integration when combining different educational activities:

- The activities are well revealed in kindergarten education when preschoolers use recycled paper (for postcards, toys and other jobs). During the process, they find out what the paper is made of (wood), learn and find out what the first people wrote on when there was no paper (stones, leather, etc.).
- They also solve very urgent ecological problems, such as sorting out paper, conduct experiments and sort paper by themselves. In this way, education is directly linked to the practice of life (topicalities of today's education) and this way creativity and critical thinking are developed.
- Primary school pupils (65%) use techniques such as the Skype Conference (with Indian and Indonesian pupils - language skills and critical thinking). By presenting their

countries and analyzing the books they read, they improve their foreign language skills. The class of tablets is used in the educational process to talk to Portuguese students about the advantages of reading which determines a direct link to real life practice. Interdisciplinary integration is becoming increasingly popular: Lego robots and Physics, Mathematics, IT and English.

- 100 per cent of respondents share examples of integration such as knowledge, news analysis, Mathematics and PE or traveling around the world (Turkey); also, active experimentation, class meetings and Social sciences, Biology and Chemistry (Latvia).
- Norwegian partners claim joint tasks to be a school tradition. Integration is included into projects in order to bring together different subjects. Experience is worth paying attention, as teachers aim to show students that things in the world do not exist individually. The aim of the teacher is to show the pupils that the acquired knowledge can be easily used in another context. The Norwegians say the world is not divided into fragments and things are intertwined.



**Changes in pupils' academic progress during the project, applying critical and creative thinking methods**

According to the participants (90%) of the survey, pupils participate in the education process in the hope that they will have the opportunity to discover things themselves, to explore, create and accumulate knowledge. 100 percent of the teachers involved in the project activities, aim at pupils' progress and achievements in the education process and their improvement. Changes in learning achievement by age group:

- Primary school pupils are assessed by grades based on the level and their personal progress is compared. Therefore, it is very individual and difficult to evaluate achievements in general or using percentages. However, it is definitely a fun and attractive learning process that influences students' achievement in general. Respondents believe that this improvement is significant. The teachers (80%) say that they have observed a change in student engagement in learning activities, and increased motivation for learning.
- By testing a teaching tool and applying critical and creative thinking techniques, students are encouraged to join academic disciplines, selectively choose various critical assessment tools, provide arguments, solve problems, and make decisions (Turkey). They also improve scientific research and information retrieval skills as well as practise integrating the main learning subjects. The teachers say that students' ability to use various search sources is dominant and independent search of information is monitored.
- Latvian partners prioritize the ability of a child to analyze and argue in different lessons. The educational process becomes more interesting for the pupils, they get involved and encouraged to be curious, look for more interesting solutions, analyze, gather information, draw conclusions, and voluntarily participate in the development of educational content while collaborating. The conclusion could be drawn that students are able to formulate and answer questions, discuss, solve problems and make decisions that require a higher level of thinking. Learning outcomes have improved.
- The Norwegian partners state that it is difficult to talk about formal evaluation (grades), but there is an obvious increase in students' engagement and motivation.

*Summary of the research data has determined the impact on*

***The pupils:***

- Pre-school age - children improved their cooperation skills, motivation and involvement in the learning process and engagement in the activities. No change in attendance has been observed.
- Primary school pupils have learned to use various sources of information, work with technology, improved their co-operative competences, and improved their communication skills. No change in attendance has been observed.
- Middle schools pupils have improved their academic achievements, ability to analyze and systematize information and the learning competence. No change in attendance has been observed.
- Secondary school students have improved their communication and co-operative competences, their ability to systematize and analyze information, ability to evaluate effective learning tools to achieve results and work constructively in a variety of learning environments. Both, attendance and motivation have improved.

When assessing the answers of the survey, it became clear that the impact on pupil's school attendance was minimal. All pupils have improved their learning competencies, significantly increased learning motivation and a desire to learn and go to school.

***The teachers:***

- Kindergarten Giliukas educators and pre-school teachers say that the attitude towards critical thinking developing methods and the methods that improve learning, has changed as systematic teacher engagement and collaboration has improved alongside with the analytical skills.
- Teachers working with school-age children have clearly improved by 50%: search skills in learning resources and educational environments as well as understanding of the personal impact on the teaching practice. Teacher's motivation increased observing greater involvement of the pupils.

- The teachers develop their knowledge personally and, by testing new products that promote critical and creative children's thinking, acquire new knowledge for improving the educational process in general. A variety of learning resources and learning environments is used appropriately. Attention should be drawn to the increasing motivation of the teacher to monitor the greater involvement of the students. At the same time, the whole school community learning culture and curriculum is changing positively.
- The project partners in Turkey, Latvia and Norway point out that the new experience obtained when creating and using a teaching tool, is a positive change in educational outcomes, regardless of the conventional assessment methods used by schools. Teachers and pupils collaborate in the educational process in order to achieve mutual results.

The respondents of the survey state that the school curriculum is being developed, taking into account the relevance, the needs of the students and the challenges of the 21st century. Teachers' motivation is increasing as they observe higher involvement of students in the teaching / learning process; therefore, according to the communities of the Lithuanian schools participating in the project, it is appropriate to have a critical and creative thinking strategy in each school community. By deploying a critical thinking strategy at school, knowledge building takes place when linking new experiences and information with the experience a pupil has and by meaningfully combining the former and the latter. This way pupils gain a new understanding of the surrounding environment and themselves. Accordingly, learning environments in which a child can practice, e.g. playrooms, book rooms, winter gardens, spaces and equipment for group / team work, laboratories or other experimental facilities are of crucial importance.

## **Conclusion**

1. According to the study, new learning / teaching measures tested in the project to develop critical and creative thinking have increased the motivation of all pupils involved in project activities
2. The positive impact of the project activities on the systematic learning and personal progress of pupils is observed. Also, the impact on self-sufficiency and development of teamwork skills, improvement of other general competencies is determined.
3. Testing of the teaching measures, more than four critical and creative thinking sessions at each partner education institution were organized and a positive change for both teachers and students was identified.
4. Learning outcomes and personal progress of pupils have improved. Although in some schools involved in the project the students were not graded, teachers monitor the increased motivation and responsibility of the students for their activities.
5. Attendance did not have a significant impact on the development of creative and critical thinking;
6. A positive impact of project activities has also been identified for teachers. According to the questionnaire, teachers changed their attitudes towards developing critical and creative thinking in their lessons, discovering new and more interesting activities that encourage children to create, analyze, summarize, and draw conclusions. The teachers became helpers, counselors and guides who raise purposeful questions, or formulate tasks for learners, encouraging independent search and decision making.