Virtual Meeting
Presentation of the Comments on Relevant Initiatives

Meeting held 31 March 2015, 15:00 – 17:00 CET

The video of the meeting is available on this Internet address:
http://flashmeeting.e2bn.net/fm/flashmeeting.php?pwd=3e2c1a-18236

http://flashmeeting.e2bn.net/fm/e9c04f-18703

Participants

Partners

Grzegorz Grodek (36,6 Competence Centre), Anna Ziemecka-Poteraj (36,6 Competence Centre), Sonsoles Jimenez Gonzales (Alqueria), Andreea Ionel (EuroEd), Lorenzo Martellini (Pixel), Giovanni Caruso (Pixel), Romans Vitkovskis (Riga State Technical School), Juraj Dubrava (TRANSFER Slovensko), Vlasta Dubravova (TRANSFER Slovensko), Miglena Molhova (ZinevArt), Zornitsa Staneva (ZinevArt)

Teachers and Experts

Milena Gosheva (Bulgaria), Nevenka Kostova (Bulgaria)Ignacio Pachés Giner (Spain), Laura Capella (Italy), Uldis Heidingers (Latvia), Anita Krišamane (Latvia), Maria Deptuła-Chocholska (Poland), Elza Gheorghiu (Romania), Adina Amariei (Romania), Daniela Lupuleasa (Romania), Jozef Strakoš (Slovakia), Katarína Javorová (Slovakia)

Minutes

As an introduction Lorenzo Martellini presented the agenda of the meeting.

Presentation of the transnational discussion on the project portal related to the relevant initiatives (RSTS)

Romans Vitkovskis did the first speech of the virtual meeting. He presented the transnational discussion on the project portal related to the relevant initiatives. In this step of the project initiatives/projects were selected and collected commentaries in order to choose more useful method used before or as good addition for science subject teaching.

Results are as expected:
1. Teachers and students chosed known things among long list of initiatives to feel more comfortable as to try understand new material and it was a main reason of positive valuation of chosen initiatives (I have long positive practice and there I can see something to add and make it better).
2. Students and teachers are mostly concentrated on material and method's attractiveness directed on teaching and remembering neither on new teaching and learning methods and have marked as good a number of initiatives using new technical equipment, internet, excursions, etc.
3. Students have mentioned as desirable all what they can use for self education.
4. Part of teachers is looking for universal teaching methods to use them to teach science subjects.
5. Notion comprehension/understanding appears very seldom in comments because all resources are concentrated on knowledge and skills.

There appear three methods in class of fresh initiatives (methods, resources, etc.):
1. Storytelling@TeachimgModel (S@TM),
2. Robotics or metheod - project in material,
3. Goerudio or model method.

All of them prescribe real work of students und/or teacher's control. Approach -teacher tells and students listen - is reverted to student tells and teacher listen.

Almost all teaching previously was made on one type approach – student must listen teacher and repeate. The long tail of history have great impression on initiatives up today and it called inertia. It is reason why initiatives with fresh content are very seldom created.

As well as Goerudio approach was selected to try - presented feedback contains some interest of teachers and students to use it. Students founded model creating as attractive and interesting process. Teachers agree that it is rather good way to comprehension and proposed add well known methods and resources to model making process. It is good. Also was met Goerudio misunderstanding, but it can be explained by too short time.

Feedback of the Bulgarian teachers (ZinevArt)

Miglena Gosheva reviewed the work of the Bulgarian teachers on the relevant initiatives drawing the main features of their contibutions. During the review of relevant initiatives Bulgarian teachers focused their comments mainly on the following points:
- Language of the deliverables – a lot of reviews commented that it would be easier if the resources of the initiatives are in the national language in order for the materials to be more freely and easily used in the education process;
- Pedagogical value of the resources – a number of teachers focused their reviews on the fact that most of the initiatives aimed at providing networking between users and educational resources, but not actual methods or new pedagogical approaches to be used in the various science subjects, taught in schools;
- Pedagogical aim of the resources – there were number of reviews saying that a lot of resources refer more to developing key personal competences of children instead to learning science, which made it hard for the resources to be considered applicable in the science subject teaching practice;
- Attractiveness of the resources – all teachers in their reviews of the initiatives focused on the attractiveness of resources as a key factor for the educational resources to be able to grab the students' attention;
- Options for searching through the provided materials – teachers commented that even if it is important to have a rich database of resources it is as important these resources to be able to be found and used. Teachers really appreciated initiatives which provided searchable resources according to various criteria – age of students, subject taught, type of the educational activity, etc.

With regard to the feedback from the teachers and students comments I would like to point out first the great number of comments received – more than 10 teachers comments and more than 90 students comments (as of 13 March 2015). Most of the comments were positive as of the evaluation of the initiatives and the resources they provide, but there were also critical comments. About teachers' comments:
- Teachers have chosen to comment initiatives, which are in their subject area (physics, chemistry, biology, mathematics).
- Teachers focused their comments on the applicability of the initiatives and resources in their own practices.
- Teachers searched for common characteristics of the initiatives and the pedagogical approaches and resources they use in class in order to assess how easy an initiative would be used in teaching and if it would be interesting and helpful for students.

About students' comments:

- Students focused their comments mainly on the level of attractiveness of the initiatives – if the resources are interesting and if they would make the learning and most importantly the comprehension process easier;
- Students also commented on the types of resources provided – if they are targeted to teachers mainly or students. They were reluctant to comment on resources targeted on teachers;
- There were a lot of students' comments about their wish more teachers to use in their practices interesting and innovative resources and materials as the ones, provided by the initiatives;
- Students appreciated highly the initiatives that provided resources for self education.

With regard to feedback received by the teachers during the development of the educational products:

- Teachers appreciated the Goerudio method as a good method they would like to try with their students and they expressed different visions on how to organize the students work in order to receive good models;
- Some teachers pointed out that it would be better to focus their work on developing/adapting materials (pedagogical materials as technologies or methods), which could be applied in any science subject – not only the subject they teach at school;
- One of the initiatives was regarded as quite innovative in terms of approach of science teaching – it was the StoryTelling@TeachingModel (S@TM). There might be teachers who will try to further adapt that teaching model, but we still have not received the final decision of teachers on what exactly will be developed as an educational resource.

Miglena Gosheva closed her speech asking to Italian partner how Italian teachers consider the initiatives they reviewd from the point of view of their usage in class. Under this perspective, she would like to know (on behalf of Bulgarian teachers) which are Italian teachers' most appreciated initiatives and in which way they changed their methods according to the use of inititiatives. She asked for a particular focus on Galileo Museum initiative.

Feedback of the Italian teachers (Pixel)

Govanni Caruso started his speech answering Miglena Gosheva question focusing on Galileo Museum initiative as example of how Italian teachers consider the educational potential behind these initiatives. In fact, Italian teachers exploit Galileo Museum under many aspects: by physically visiting the museum with their students; by taking inspiration from the scientific experiments available on the museum website both replicating them in school labs and virtually simulating the experiments in case of lack of school lab; by studying the history of science through the repository of ancient scientific tools available on the portal.

Going through the presentation of Italian teachers' work on the initiative, Giovanni Caruso drew the status of the comments of relevant initiatives that is an in progress activity in Italy. The expected result for this activity is the collection of 25 comments at least and up to now we have collected 21 contributions.

Beyond the numbers we believe that the most relevant meaning of this activity come from the contents and the quality of the comments. Before going through the analysis of the comments, it can be useful to make a step back.

At the time of the reviewing of the relevant initiatives teachers reacted in different ways. Some of them were really enthusiastic and available to adopt the new internet-based resources in their classrooms. Others showed scepticism for the exploitation of these initiatives. The attitude of this last group has been a surprise and a novelty, since until now, teachers have always shown a positive and proactive attitude towards project activities. Some explanations can be found within the methodology adopted. Once identified and early reviewed the internet-based resources, Pixel assigned 3 initiatives to each teacher in order to proceed on texting and reviewing them (also gathering the opinion of their students). Italian teachers were not free to

choose the 3 initiatives but they had the possibility to replace the assigned ones with others they found on the Internet.

Teachers recognised the potential of these resources, but sometime they found them not perfectly suitable with their teaching needs. Conversely, students were usually more favourable about these initiatives than teachers.

With this departing point, it can be expected that this critic approach will affect also teachers' comments. Instead, the possibility to choose among a wide set of initiatives and the willing to know new proposals for the improvement of their teaching methods push them to find really reliable initiatives. Even the most reluctant teachers changed their minds.

This success can be explained by two key factors: the freedom of teachers to choose the most suitable initiatives according to their needs and the wide choice offered by the collection of more than 200 initiatives coming from all around Europe.

Some problems still remain like the barrier represented by the language, but, as teachers declared, project activities are also an opportunity to improve their language skills.

The results on the current activity are not definitive yet but they are already satisfactory under many points of view (including that one of the foreign language). The graph below shows the current situation of the comments to the initiatives received so far and grouped by partner who uploaded the commented initiatives.
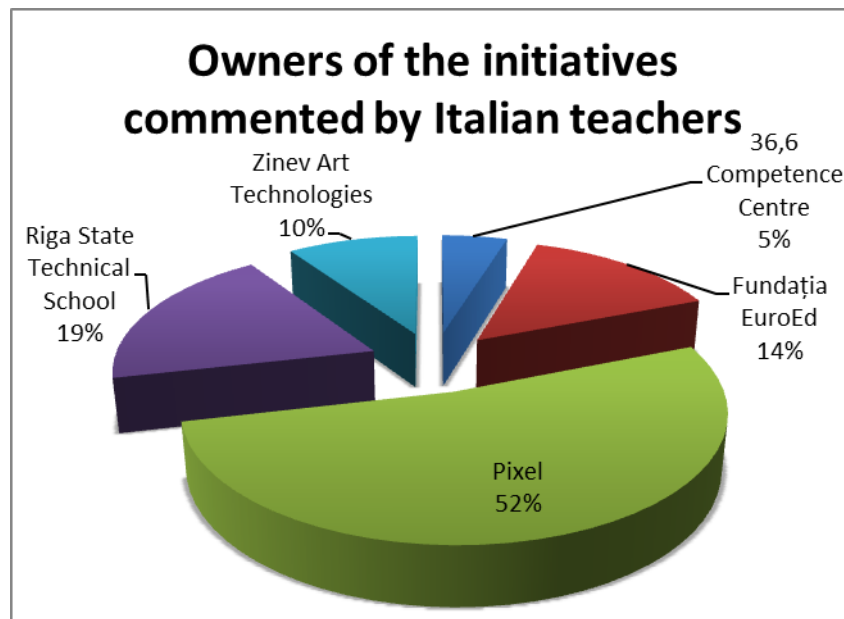
The half pie taken by initiatives uploaded by Pixel is not the most surprising one. Indeed, it was expected that Italian teachers would have preferred to comment initiatives having also a translation in their national language. But this data means that 1 comment out of 2 is related to an initiative uploaded by a project partner different from Pixel and reviewed by a not-Italian colleague. The contribution of this fact to the European networking cannot be denied.

Among the initiatives uploaded by foreign partners, Italian teachers prefer the Latvian one (19%), followed by the Romanian (14%), then the Bulgarian (10%) and the Polish ones (5%).

The positive element is not the unique remarkable aspect of the comments. Reading from the comments, teachers take the occasion represented by this activity to get to know new resources available on the internet. Goerudio project has not the ambition to engage competition with other search engines on the web,

but it offers two types of advantage in comparison with any other free research. Teachers recognised the added values of this collection of initiatives both for the initial selection made by project partners and for the combined review of teachers and students. Indeed, as the reviewing phase demonstrated, a free research on the internet without any other criteria can lead toward resources not perfectly fitting with specific and demanding teaching needs. Instead, the presence of teachers' and students' reviews serves as a valuable guide based on real experiences and teachers' comments confirm to appreciate this section.

As stated above, all the comments collected so far are positive, but deepening the analysis we can identify three categories of comments with different reasons for the positivity:

- Past experiences
- Inspiration
- Replication

Sometimes, teachers use the initiatives available on the portal to find confirmation and support regarding experiences they already put in practice like Massimo Amato said commenting "Solar car project" reviewed by Riga State Technical School "Three years ago I built a zero emission vehicle with my student, a tricycle two-seater pedal assisted, with Lion battery to help the cyclists. It was a nice experience".

Providing an example for each group, Veronica Del Bene commenting "InnoMathEd - Innovations in Mathematics Education on European level" reviewed by 36,6 Competence Centre perfectly represent the second case: "In my opinion this [initiatives] is full of creative ideas and strategies for teachers intending to improve their didactics using computer technology. In particular I found interesting ideas about the use of dynamic mathematics and simulation software with which teacher and student could experiment in class the concept of mathematical modelling of problems drawn from everyday reality".

Together with the previous case, the third group is the most relevant for the aims of Goerudio project. This is the case of teachers who express the willing to use and replicate the internet-based resources in their classrooms. Maria Olivotto commenting "Tutorials and educational resources" reviewed by Pixel makes a clear example of this type: "I'm going to use it next time I'll start a Physics course".

The collection, reviewing and commenting of relevant initiative can be considered as separate activity of the project, but it is also the departing point for the creation of educational products that is the following phase of the project. Pixel organised a workshop on 18 February 2015 aiming to train teachers on how to perform their tasks. Pixel staff proposed two main paths for the creation of new education products: learning units and Goerudio method.

Both the solutions fulfil specific objectives of the project. As far as the former is concerned, Pixel staff strongly recommended to create new teaching units including the resources available on the Relevant Initiatives section of the project portal. The main feature of these units is that they are built with a special focus on learning perspective according the newest directions of Italian Ministry of Education. Teachers positively welcome this initiative also because it anticipates ministerial instruction that will become compulsory the next year.

The latter, the Goerudio method, was the most disputed proposal. In spite of initial scepticism, the majority of teachers accept the challenge (sometime even enthusiastically) to test this method with their students and we are about to receive the results of this pilot phase. Another workshop is scheduled on 30 March 2015 and this will be the occasion for each teacher to present the educational products and to comment them together with the colleagues. By the first information coming from teachers who started to use this method within their classrooms, we are encouraged to think that this new approach is encountering also students' appreciation.

Laura Capella talked about most recent activities she was involved within Goerudio project just to the 4th Italian workshop on the topic of the educational products. Her speech is focused on two main aspects: the comment of the initiatives and the cooperation with the students in order to implement the Goerudio method. According the first one, this activity allowed to make she more aware about the state of the art of the teaching of scientific subjects abroad. The sharing at European level of these initiatives is really important

above all because a teacher should be always updated on how his/her subject is taught elsewhere. Laura Capella praised the database of initiatives both under the qualitative aspect and the quantitative one. She proposed also some improvements as far as the availability of English translation is concerned.

She moved on the second main part of her speech, dealing with the production of educational resources. Italian teachers were provided with two main options: the creation of learning-based teachining units and the implementation of "Goerudio method". Laura Capella was already used to work according the requirements of the first method and found really interesting the latter one, despite of initial skepticism on its operating. The reaction of the students exceeded the expectations because they were enthusiastic to carry out an activitiy never done before and above all this new activity was not so boring like the traditional teaching method. They were pleased to create by themselves educational resources feeling right to the centre of the educational system.

After the success obtained with this first experience, Laura Capella will for sure implement again this method in the future, fully integrating it on her teaching methodology.

Giovanni Caruso, thanking to Laura Capella for her clair speech, pointed out some similarity he found in comparison with the Latvian situation and asked to Latvian partner to confirm or reject his impressions. About the usage of initiatives reviewed and commented on the portal, also many Italian teachers (like Latvian ones) preferred those activities replicating activities with some similarities with the past teaching experiences of the teachers. Maybe because they feel in their comfort zone dealing with something that does not sound completely new for them. According the Goerudio method, he is curios to hear how much appeal this method has after 5 year of experience. It is really a novelty for Italian teachers and students and also for its novelty it had a great success, but what are the results in Latvia in the long term?

Feedback of the Latvian teachers (RSTS)

Romans Vitkovskis took the floor before to leave the stage to Latvian teachers attending this virtual meeting in order to anwer Giovanni Caruso's (Pixel) question. There is no a unique reply because both the choice between more innovative and more traditional initiatives and the enthusiasm with which teachers implement Goerudio method depend on teachers' approach. At the end the results coming from both these activities are satisfying, even if at the beginning some difficulties have to be overcome everywhere.

Leaving the floor to Mr. Uldis Heidingers (Latvia), he pointed that there is need for a new, innovative approach to learning, creating persistent knowledge in the develoment of creativity and motivation to learn science subjects with interest. Modern learning typical trend is an excess of information selection and revision. To perform this task, the student must understand what to look for, what to select. If a student does not understand on what to focus, it is difficult to obtain knowledge, and it leads to lower motivation to learn.

Some of teaching materials are developed for some engineering profession students. They are useful in a very specific area. Preparation of project work, Power Point presentations etc. are more universal methods. A good idea is to conduct classes of chemistry outside the classroom in well-equipped laboratories. The proposals of the experiments on different topics are very interesting, but can not take all of the training period. Both the practice into line with theory is necessary, all of methodical materials are usefull, but not a universal for obtaining a sustainable knowledge.

Comprehension model methodology is universal for creation sustainable knowledge. Created models can be used for other students or teachers to raise awareness. The learning by using model methodology brings more concreteness, not just descriptive. Models can be created by students themselves through understanding patterns of childhood expierence, domestic situations, or other mundane things, parables that explain the incomprehensible. Learning tool www.goerudio.com is free of charge available for all the potential users.

By commenting initiatives, teachers show that teaching materials are good and useful. Specially materials made in online environment – games, virtual laboratory work, experiments, also virtual excursions to museums. Teachers are ready to use these materials in their work.

Teachers indicate that there are cross-curricular links, for instance, physics and sports. There are positive feedback about games in physics. In mathematics virtual tasks are highlighted and indicated as good and useful which can be performed online or used as handouts. Robotics has been marked as a well-structured site.

There are collected commentaries to subjects such as physics, chemistry, mathematics, science, biology and IT.

By analysing all commentaries, there can be made seversl conclusions:
- Teachers prefer pages with ready-made handouts,
- Teachers willingly use virtual materials,
- Highlight nontraditional methods, like, visiting the moseums etc.,
- There are not universal teacghing methods, this is the question to work on,
- Positive aspect is that there are not strongly negative commentaries, it means that teaching materials are good enough.

Teachers during the development of the educational products have mainly checked methods well known long time before. The difference was in efficiency facelifting of old methods and approaches. As it was expected teachers know methods well and mentioned initiatives have little success to compare with older one. They ordinary have used them in teaching and find more comfortable and friendly use of facelifted materials. Only Goerudio approach – use of models in education process was fresh for number of teachers and several of them have checked model method in practice at first. The feedback about models use from teachers and students was – we like it and it seems useful and more effective way how to reach comprehension/understanding. Acquainted with more than five year history and real results (given by teachers and Google Analytics) of models method teachers have motivation use the method giving more success for comprehension/understanding in comparison with other. It was facelifted methodology and teachers have assessed it as good. Facelifted methodology was used in teaching process in Valencia too.

Summary of feedback:
1. All represented by initiatives education tools (methods, methodology, textbooks and other materials) are well known before and facelifting of them have no great success but teachers use them because have real prognosed positive result.
2. Only fresh checked more than five years initiative is www.goerudio.com and model method represented by it. (initiatives – as project realisation in material are also relevant, but real use of it in Latvia is in universities). Experience of model method use will be distributed cause of efficiency.
3. Was created facelifted methodology of model method and have successful debut in frame of Goerudio project.
4. Model method have success in field where other methods give very little success – comprehension/understanding of subject. Other methods are mainly directed to better learning and remembrance neither comprehension/understanding.
5. Model method and methodology gives good opportunity involve students in education process.
6. Model method allows wide facelifting of methodology by involvement of different methods to make it more effective and suitable for students and teachers.

Feedback of the Polish teachers (36,6)

Grzegorz Grodek (36,6 Competence Centre) started pointing out that his organisation received positive feedback regarding the initiatives. During the identification we were focusing on identifying teaching methods engaging students in didactic process and based on the responsibility of students on managing own comprehension and learning. We searched for innovative methods based on the use of ICT, experimentation

and other means motivating students to study. 36,6 CC put the focus on initiatives coordinated by Polish organizations (often supported by ESF) that are ready-to-use in Polish schools because they are adjusted to core curricula of Polish schools and available in Polish language.

From teachers' and students' reviews we can assume that:
- they are positive about new and innovative methods;
- widespread use of ICT and online resources can facilitate the science education;
- participation in the projects is prestigious for schools and certainly enriches the expertise of teachers;
- methods engaging students (projects, group work) are effective in motivating students;
- learning through fun increases students' creativity and encourages to explore.

Main feedback received by the teachers when commenting on the relevant initiatives

From the analysis of the comments on the initiatives we can say that most of the teachers have found interesting and relevant methods to enrich their teaching. They expressed that they have started to use the methods they came across at Goerudio portal (e.g. Pictograms at mathematics; Eduscience at biology and science). They take advantage of applications, scenarios or games developed within the initiatives.

The problem that teachers encounter is that some initiatives' websites are not working properly. They also pointed out that the some websites are not easy to navigate and materials are not organized well.

Main feedback received by the teachers during the development of the educational products (please remember that the educational products has the aim to exploit the relevant initiatives reviewed and available on the project portal)

The teachers will exploit the pool of the initiatives to develop the educational products along with students. The projects offer various methodologies of learning and teaching (such as methodology based on self-preparation of students to classes). On the basis of the resources lesson scenarios can be developed.

Feedback of the Romanian teachers (EuroED)

Elza Gheorghiu (Romania) presents latest Romanian activity within the project organizing her speech on three main areas.

1. Main feedback received by the teachers during the review of the relevant initiatives

Teachers' comments on online projects uploaded

30 initiatives which got comments from a teacher/student/ partner

Areas of the projects:
- ICT: 3 projects
- Chemistry/ Physics: 4,
- Biology: 4 projects
- Science: 10
- Maths: 4
- Technology: 5

Feedback

The Romanian teachers' comments appreciated the following benefits of the initiatives (in order of frequency):
- Raising students' interest in science and technology: making science and technology more accessible and attractive. promoting challenging topics;
- Applicability of online project materials designed to classroom learning contexts;
- Providing teachers with useful teaching and learning materials;
- Promoting new methods in teaching sciences;

- Encouraging European cooperation and communication (exchange of ideas, experiences, solutions) among teachers across Europe;
- Building appropriate links between schools and world of work (linking theory with practice);
- Promoting mutually beneficial relationships between industry, scientific, academic and educational communities;
- Encouraging the use of ICT in teaching science and technology; motivating teachers to use new technologies;
- Raising awareness about new jobs;
- Promoting career opportunities in science for young people;
- Developing life skills (entrepreneurial skills, teamwork skills, organizational skills, presentation skills, survival skills: how to deal with natural disasters);
- Encouraging interactive learning and critical thinking;
- Helping teachers in their development
- Contributing to students' personal development of students;
- Raising awareness about the role of science within the community;
- Engaging teachers and students in evaluation and self-evaluation
- Stimulating students' creativity and imagination;
- Empowering students by promoting student involvement in learning;
- Helping disabled students with their science subject learning;
- Encouraging multilingualism through teachers' cooperation;
- Raising awareness about the importance of protecting the quality of our environment;
- Creating supportive contexts for intergenerational learning (children, students, teachers, parents, grandparents).

2. Main feedback received by the teachers when commenting on the relevant initiatives
Teachers' comments on partners' projects
The school subjects the Romanian teachers (involved in the project) teach at school are:
- Physics
- Biology
- Mathematics
- Science (Primary school teachers)
- ICT

There are: 29 comments
The teachers commented on the reviewed projects and appreciated them for (the comments are in order of the teachers' preference):
- Helping teachers with new teaching methods to meet their students' cognitive, social and physical needs through activities that are designed to be developmentally appropriate;
- Promoting active/interactive learning, learning through discovery, learning by doing, involving students in their learning process;
- Stimulating students' creativity and students' natural curiosity;
- Enhancing students' motivation to learn science;
- Encouraging students to cooperate and ask questions on forums in order to clarify ideas and get answers to questions;
- Helping teachers create new online educational materials;
- Providing teachers with accessible and useful resources: links to other websites with interesting online interactive educational material (photos, videos, animations, exercises, graphs, links) and learning activities;
- Providing teachers with useful links to research and tutorials in the field;

- Making science accessible and easy through videos; providing reliable learning materials by using ICT which enable students to visualize theoretical abstract concepts;
- Providing teachers with useful and challenging materials for students with learning disabilities, students who require special attention;
- Helping students to develop life skills;
- Raising awareness about global problems that our earth is facing nowadays;
- Encouraging the use of ICT in teaching science;
- Promoting career opportunities to young people through an effective use of social media and ICT;
- Promoting training materials designed to introduce e-applications to people with very basic or no knowledge of information and communication technologies;
- Encouraging cooperation among teachers and students at a European level
- Helping teachers to meet students' special needs (disability as well as above average students).

3. Main feedback received by the teachers during the development of the educational products (please remember that the educational products has the aim to exploit the relevant initiatives reviewed and available on the project portal)

We had several meetings with teachers: we met and discussed with individual school groups. We made an update of the project by presenting and discussing further developments of the project. We planned a plenary session after Easter when this meeting is possible. At the moment teachers' program is very busy (contests, local and national olympiads). Teachers will present the teaching products on that occasion as they will have finished their Goerudio products by then.

During the group meetings we insisted on the creativity and novelty of the Goerudio method and presented some of the samples from the site. The teachers were encouraged to try their hand at producing their own model. They also came up with new ideas and suggested other types of activities (lesson plans, tests, worksheets), which should stimulate students' interest in science and therefore motivate them to learn.

Feedback of the Spanish teachers (Alqueria)

Ignacio Pachés Giner (Spain) presents latest Spanish activity within the project organizing her speech on three main areas.

- Main feedback received by the teachers during the review of the relevant initiatives

We'll present a summary of common responses and feedback from teachers who have reviewed different initiatives. We focus on comments suggesting better or worse suitability of the initiative to be exploited at class.

In addition we plan to include some single relevant comment, that is special or interesting

- Main feedback received by the teachers when commenting on the relevant initiatives

Just as before, we'll summarize what we think most teacchers have commented on initiatives

- Main feedback received by the teachers during the development of the educational products (please remember that the educational products has the aim to exploit the relevant initiatives reviewed and available on the project tportal)

In this part we'll go to explain the two main relevant problems during development of educational products:

Misunderstanding of the goerudio methodology, leading to products which are not compliant to the aim of the methodology.

Inability to come up with a product, even if the methodology is full understood and other examples are known

Feedback of the Slovak teachers (Transfer Slovensko)

Juraj Dubrava (TRANSFER Slovensko) presents latest Slovak activity within the project organizing her speech on three main areas.

1. Main feedback received by the teachers during the review of the relevant initiatives

Slovak teachers uploaded 25 comments for 25 initiatives in following structure:

Topics:
-   Chemistry 6
-   Physics 3
-   Biology 1
-   Science topics general 8
-   Mathematic 7

You can see that for our Slovak teachers are initiative focused on general scientific topics very interesting, that means initiatives for development e-learning materials, new didactic approaches in scientific teaching, methods and tools for students motivation etc.

Countries:
-   Poland 9
-   Spain 4
-   Italy   5
-   Rumania   1
-   Bulgaria   4
-   Other EU 2

The reason for this high number of polish initiatives is well known/common history and very similar language; some of our teachers speak polish language.

The Slovak teacher´s comments show the key points for utilization of the initiatives.

Teachers had the opportunity to look over all published initiatives, except those commented in the task WP.2.

Results of their commenting had been presented in Valencia. Role WP3.B brought the opportunity to look at all the other initiatives that were added to the portal by project partners.

The answers were regulated so that teachers rated/ commented the initiative in terms of:

a) The importance of the initiative

   (Teachers were not limited to name themselves the importance of initiatives towards their subject)

b) How initiatives help to overcome shortcomings in motivating students to study science subjects

c) Whether they plan to test initiatives

The results of the comments´ analysis are:

-   **An environment for searching initiatives, for inspiration**

Goerudio portal provides the ability to search for resources by subjects; even within them are themselves generally focused initiatives. They provide possibilities for the use of on-line learning, e-learning, animations, videos and virtual laboratories.

-   **Pedagogical use of initiatives**

- in terms of appreciation of the opportunities for teaching the subject through methods, procedures - physical experiment, Power Point presentations, projects, didactic games and tasks to test knowledge and self-evaluation.

- Complex initiatives were appreciated (for example KJ BG / 4) and Bulgarian initiatives, who presented complex curriculum and learning lessons. Also initiatives that bring teaching materials promoting learner autonomy and allowing them to decide on their own working pace and so on.

-   **Supporting teacher´s education**

Commented initiatives are considered to be good sources for teachers´ self-education, particularly for teachers- beginners.

The utility of materials for teaching - noted the possibility of transmission to their teaching. EU projects are in specific educational area where in science education the content standards and a lot of other standards are similar.

- **Support of the students learning**

- according to teachers´ comments several initiatives can be used for both target groups - for teachers and students, such as IT project - Restore (DB) – helping to perceive scientific laws, describe the natural sciences in everyday life, the things around us (e.g. VW - mathematics and the wheel of a car - project IT MT in BEAU).

- **Supporting the relation to the science field and the way of thinking and discovering the science field**

Complex projects such as RO / 2 –DD. Science: The Great Escape, PL / 4 V.K. supporting the relationship to the study program/ field, the development of scientific knowledge, the possibility to participate in research activities.

The presentation of science is oriented on public, students with opportunities to review (comparison - "Researchers' Night" in SR). It encourages students' interest in technology, participation in science competitions.

- **Language and initiatives**

- Language is an obstacle if the projects are completed or only in the language of the country in which they are incurred.

Our teachers did not comment initiatives in terms of their usefulness for the development of personal and social skills such as cooperation

Teachers were only critical towards projects were visual aspect was considered an obstacle to the orientation of the project.

2. The teachers commented on the reviewed projects and appreciated them for (the comments are without order of the teachers' preferences):
- methods engaging students (projects, group work) are effective in motivating students;
- learning through fun increases students' creativity and encourages to explore.
- promoting active/interactive learning, learning through discovering, involving students in their learning process;
- enhancing students' motivation to learn science;
- helping teachers create and use new online educational materials;
- providing teachers with accessible and useful resources: links to other websites with interesting online interactive educational material (videos, animations, exercises, graphs) and learning activities;
- making science accessible and easy through videos; providing reliable learning materials by using ICT which enable students to visualize theoretical abstract concepts;
- encouraging the use of ICT in teaching science;
- encouraging cooperation among teachers and students at European level

Students' comments:
- They appreciated when teachers are familiar with the initiatives and use them in the classroom;
- Possibility to check their knowledge themselves;
- Practical use of animations, exercises to understand the subject matter;
- Enthusiasm for the ES project Tadeo - through the animated character which draws into the action and offers the development of knowledge (would like to have it translated into SK);

- Appreciate the projects which show "science" which is a challenging, perfectly functioning in everyday life, especially in their field/ study program (vocational schools)
- Funny methods of obtaining information, stimulating curiosity
- Possibility to engage students in activities where they are in the computer lab. In Slovakia – to try to equip students with tablets!

As an obstacle identified:
• Language - if the project is in a language they don't understand, they require at least English

3. Main feedback received by the teachers during the development of the educational products (please remember that the educational products have the aim to exploit the relevant initiatives reviewed and available on the project portal)
We have very good and intensive communication with our teachers about comments and future project activities.

Teachers responded positively to offer to use method of working with models in a personal interview (LT - www.goerudio.com). However, they suggested to organize the meeting focused on professional introduction to the topic, so there would be a possibility for students involvement into the educating process (LT summarizing point 5). So far they have only worked with it through textbooks, where the method is used to help the understanding of the lessons/chapters.

On the 30th of March we will have in Bratislava our national workshop about Goerudio methodology and modeling. It was not possible to have this meeting before, because at the moment teachers' programs are very busy - final exams on secondary schools and working on national projects.

On this national workshop, one of the best expert in didactic of scientific topics and models of scientific topics, especially of mathematic and physic from the Faculty of mathematics and physics, from Comenius University in Bratislava, will participate.

During the workshop this expert will discuss with teachers possibilities about creativity and novelty of the Goerudio method and try to create some models which should be later created in classes with students. The teachers were encouraged to try and help at producing their own model. They also came up with new ideas and suggested other types of activities (lesson plans, tests, worksheets), which should stimulate students' interest in science and therefore motivate them to learn.

Conclusion of the Virtual Meeting (RSTS)

Romans Vitkovskis from Riga State Technical School drew the conclusions of the virtual meeting.
He is pleased to notice that teachers and partners all around Europe have reacted to the Goerudio method according to his expectations. Despite of some initial skepticism towards this methodology, it seems that the majority of teachers are accustomed to this new method. This new teaching way received the more enthusiastic feedback by the students and also this point was quite expected because of the newness of this method. By the other side, some difficulties pointed out by some partners are also normal in an initial stage of implementation of this method like the one during which the project is.
He was surprised by the fact the many teachers already started to customize this method according theirs and their students' needs in order to add this kind of didactic experiences within their teaching methodology.
From a general point of view towards all the initiatives uploaded on the portal, those ones which received the most positive comments are those ones providing teachers with innovative, fresh and ready-to-use resources. In fact, a common feature of teachers all around Europe is that, due to their time-consuming job,

they have no time to waste in order to find the way how to understand or how to use educational resources they can find online.

According to this perspective, Goerudio partnership is moving on the same way of teachers needs, so, by continuing like now, project outcomes will satisfy the results set on the application and users needs.