DynaMAT Correlation Meeting

Vienna, April 27 – May 1, 2011

Wednesday, April 27, 2011

Arrival all teams.

Present: Andreas Ulovec (University of Vienna, taking the minutes), Soňa Čeretková, Ján Sunderlík, Ján Benacka (University of Nitra), Oleg Mushkarov (Bulgarian Academy of Science, Sofia), Vladimir Georgiev (University of Pisa), John Andersen (VIA College, Arhus). Freya Hreinsdóttir (University of Iceland)

Thursday, April 28, 2011, 09:30 – 11:00

Andreas: Welcome to everybody. Some small changes in the work plan.

(Going through the program)

Presentation of DK team.

Sona: Did you try to do it with students?

John: Until now I use it only myself, but will try it out next year. My colleague has tried it, mainly with GeoCaching, and it worked very well.

Sona: It was described also in PRIMAS project. It has been done by colleagues from ecology and geography.

Andreas: We will also do materials with GeoCaching.

Vladimir: There was a question posed by John about Google Earth and Google Maps. If you use it, there is “Google” written in the map.

Andreas: We will check the legal text of Google Earth and Google Maps.

John: Also there is possibility of dynamic link.

Vladimir: One more question: **Target group is primary teachers?** Because maybe Sona and Andreas have different target groups?

John: My target group is primary teachers.

Soa: Yes, but it can be **different target groups from different teams**.

Andreas: Agree, we also did this with Math2Earth, we had materials of different levels, and it was accepted very well.

Vladimir: The discussion of errors etc. in measurement may be not so fitting for primary level, but we can discuss it at other levels.

Freyja: Is the track important in GeoCaching, or is it only the points?

Andreas: There are MultiCaches where you go from one point to another to yet another, but the track itself is not important.

Oleg: In the first two materials, you have a GPS and you want to do something about it. Are you give some procedure?

John: You could do e.g. walking a pentagon etc.

Oleg: But how is this a natural problem? You take GPS and you say my task is doing a pentagon. But there are other procedures. I did not see the procedure in your material.

John: You have to find e.g. two lines that intersect, so I had to fix some convenient points, i.e. I have two choose points that are accessible, and that are far enough apart to get a good intersection point so as to the lines not being parallel.

Oleg: If I have all the tools that are possible, I could take a map and just locate it. So it would be necessary to fix the tools, and not say you can use all the tools.

John: Agree, and then you can talk about and compare the different tools. So **not only pose the problem, but give the restrictions**.

Oleg: Yes, I think it is important to give the restrictions.

Ján S: I think it is quite useful for students, future teachers, because you get several things connected.

John: Also it is about that mistakes are not only bad, but you can use it for learning something.

Oleg: We did this in artillery, but you need some special points, do triangulation.

John: How about “dynamic”?

Sona: I agree that also the process can be dynamic, not only moving pictures on screen.

Vladimir: **I think the materials can also be combined with standard program in school. It is also good that we not only have geometric problems, but also other things.** I also have a question connected with Kolb’s circle. From where does this come?

John: I met it once when we did courses for adult teaching. But it is a usual tool in education. **I think it is important for students to know that it is not a straight line from task to solution, but very often can be a circular process.** E.g. we had a task about the steepness of stairs, where students used several methods and got several results, and this was an important learning process for most of them, although there were some who rejected that as they said it would be inaccurate.

Vladimir: **I think it is important that you can learn from your errors. So we shall keep this in mind in the materials.**

Sona: One remark. There used to be tradition in SK to have one lesson about geometry in the field.

Thursday, April 28, 2011, 11:20 – 12:55

Presentation of BG team.

Vladimir: There is one thing about art + geometry: Usually in GeoGebra you are speaking about creating *tools* instead of creating *buttons*.

Freyja: Yes, I think you can now make button to start the tools.

John: I think it's **very good with the examples of making conjectures with GeoGebra and then proof it**. Those are examples that we should look for.

Andreas: I like the **variety of topics**. The art + geometry was good, also I liked the problem with the locus, as it is example of simple problem that you can easily explain to a pupil, yet has not been solved yet.

Oleg: I also told students to write down conjectures, where they do not have solutions.

Vladimir: I also like to put the idea of creating conjectures. I would like to have more examples of wrong conjectures. I think it is important to show that wrong conjectures are also important.

Oleg: But it may be difficult, as you try to create right conjectures, and wrong conjectures are usually happening.

Sona: Wrong conjectures, and to follow them, needs a very experienced skills of teachers, and also schoolmates. I am afraid that the level of the materials would be too difficult for students in our schools.

Oleg: I agree with this, even in Bulgaria the situation is similar.

Sona: I am doing more simple problems, and students like them. But still it is important, because they **may have pupils with very high abilities** and they have to deal with this.

Freyja: I also have students that are able to do things in GeoGebra, and are not very able to do the mathematics by hand. Yet it is important to know both.

Andreas: I liked the photo from John about how you see the snippets of paper and the trash on the workplace, instead of only showing the final product.

Freyja: Yes, but this may be difficult, as the teacher is then considered "bad", as he is not prepared very well.

John: Once I had a student who did not like "pre-prepared" problem, but wanted to see how I tackle new problem.

Oleg: Also this happens in creating problems for Math Olympiad.

Sona: I remember when we created math textbook, it was not possible to show wrong answers, even when we showed why it was wrong. Lecturers did not allow it. But it is not necessary to have fastest solution all the time.

Thursday, April 28, 2011, 14:00 – 15:05

Vladimir: Two additional comments: One is that mathematics is not only geometry, so I liked the idea of Neli because it is not geometry, and the second is that we should remember that GeoGebra et al. is mainly a tool, and not so much the goal.

Presentation of IT team.

Oleg: First, I would suggest Vladimir for the bus problem, to take the middle point first which would give you a circle. Then maybe we can change the angle from right angle to arbitrary angle. About the Snell's law I am wondering when we start with two media, then finding the relation between the angles with the help of GeoGebra, that may not be easy. Also it reminds me on the "shortest path" problem from the last project.

Andreas: Do you need to be able to program VisualBasic with your PowerPoint materials?

Vladimir: No, it is very simple and only with Graphic Interface.

Thursday, April 28, 2011, 15:20 – 17:05

Andreas: We shall first turn to the **discussion about e-book**, i.e. what it is, then discuss organisational and budget matters.

Andreas: Some of the materials we may be able to retain dynamic if we put them in html, but not all of them.

Freyja: Also the question is **do we give away the source code or not?** Because then students would just download it.

Andreas: Maybe the **simple things we can just tell constructions but not give source code**, but with **more complex constructions we may need to give it**, or otherwise we would need to explain constructions too much.

Andreas: As to the format, I originally thought it all would be in html with stuff embedded, but is it really the mode that students would use?

Oleg: Jenny has some concerns about **either html**, because it may be too complicated, **or pdf**, because it is not dynamic, it is just book.

Andreas: But **pdf can contain links**, not embedded materials however.

Oleg: Also how about Jenny's question about a unified structure? Can we answer that now, or do we wait until the last presentation?

Andreas: We should wait until tomorrow.

Vladimir: Now to the **organisation part**. The **contract I just gave you**, and also the **money has been sent**. Please **everybody to send me financial information about everything, i.e. send forms from bilateral contract plus copies of boarding passes and flight receipts**.

Freyja: I will still try to get my two extra nights from British Airways.

Vladimir: If it is not refunded by them, we can use project money for it, as you can justify it with boarding pass.

John: How is this rule with the 70%?

Vladimir: You received x Euro of money, and you should use 70% of that by the intermediate report (which is due at April 30, 2012).

Sona: I have another problem, my university does not refund me because I did not keep local rule of having 3 competitive offers.

Andreas: I think we can have it paid by my university, and we shall put the balance into the second preliminary payment.

Oleg: **How is it with number of days** we can use for travel? 4 or 5?

Andreas: **Budget says 5, but rules say "workdays+1", and as we have 3 workdays this means you have to calculate with 4 days**.

Oleg: Also they told me that we can **subcontract employees of our university. Is it true?**

Andreas: Handbook, i.e. contract, clearly says "**no subcontracts for employees of partner institutions**".

Vladimir: What with other costs?

Andreas: We have to **distinguish between "other costs",** which do need receipts to justify, **and "indirect costs"**, which do not need receipts. "Other costs" we said would be there to go to international conferences and present project results.

Freyja: Yes, but it is **only possible within LLP countries**.

Report about co-ordinators' meeting in Brussels earlier this year.

Friday, April 29, 2011, 09:35 – 11:00

Presentation of IS team.

Andreas: I like the **combination of calculus and algebra**. Because, as Vladimir said, students often forget the graphic meaning of e.g. derivative.

Jan B: Also it is very easy to use.

Freyja: Yes, which makes it also **easy to give instructions**. Also, it is good that it is icon oriented.

Sona: We also are going to use the combination of calculus and geometry that we received from other project and we are allowed to use this.

John: The point about numbers being too easy (e.g. only integers), I have the same experience. It is important that they learn that you can also scale or zoom in.

Friday, April 29, 2011, 11:10 – 12:15

Presentation of AT team.

Jan B: Do they have to do calculations?

Andreas: Yes, for making educated guess.

Vladimir: Two questions, one about Mandelbrot. This is java, **can we increase aesthetic value?**

Andreas: **Yes**, I hope I can do that.

Vladimir: And second, about the lens problem. Maybe you can also **modify to simple plane**, and also with two intersecting planes.

Sona: I like the **structured work**.

Jan B: Modelling "taking a stick around a corner", can it be done with GeoGebra?

John: You can use both directions: Making conjecture, or checking results.

Friday, April 29, 2011, 13:35 – 15:15

Presentation of SK team.

Vladimir: Where did you apply the word thing?

Jan B: When you want to make textbook about geometry it is very useful.

Oleg: So this is **collection of constructions of geometric problems**.

Jan B: **Yes**, and it is **for beginner level**, i.e. starting with real basics.

Oleg: So, **where can you apply this?**

Jan B: You can **assign students to make constructions in classical way**, i.e. ruler and pencil, or they can construct it in Word. **Advantage is that you use Word anyway** to write the text, so you can use it **also for the constructions**.

Vladimir: We may also **compare the possibilities of Word with the other programs**, e.g. for the courses.

Sona: I like it because **you need to know the geometry/mathematics before, and only then can you make the constructions**.

Jan B: So the aim is how to make nice and accurate constructions.

Oleg: For me, this basic thing how to make accurate drawing, is the aim to replace ruler and pencil with computer? And if yes, why? Where is the mathematics? So, don't stop there, but also use it to teach the students mathematics.

Sona: And you don't need special software, only Word.

John: Students also like that it is nice picture, which helps maybe more than just blackboard picture.

Jan B: Also with inaccurate drawings, you also may come to wrong conjectures.

John: How about scaling when you print?

Andreas: I found Sona's material very nice with the clock, and the examples going with it.

John: I agree, there are nice questions with it. And what questions can you ask if students only know digital clock?

Sona: We also **ask our students to create equivalent problems**, meaning problem with very similar mathematical content but with different contexts.

Vladimir: At some point you said that you succeeded to move one of the hands, then the other hand moves automatically. Can this be done also with third hand (counting seconds).

Friday, April 29, 2011, 15:45 – 16:35

Presentation of SK team.

Andreas: **Meeting in Iceland will be the next deadline, materials should be almost finished by then and read by everybody**. Just to remind everybody, **meeting will be Sept 2-6, with Sept. 3,4,5 as working days**. To read it all it would be nice to **have it some weeks before, i.e. by August 15** (if you have it earlier please send it earlier).

Sona: I hope we can use webpage to have it uploaded by every partner instead of sending by email.

Vladimir: We can eventually also use system in IT for upload and download the pdf.

John: Does it mean that **in September we have final checking of English?**

Oleg: **About meeting in December, how about the second week? December 7-11?**

Everybody agrees, December 7-11, i.e. arrival Dec. 7, work Dec. 8,9,10, departure Dec. 11.

Andreas: Then everybody is free to buy tickets for this.

Vladimir: How about **ISBN?** Can we have it?

Sona: **Yes, if we have CD or DVD**. We can publish it in SK, or maybe better in CZ.

Andreas: That reminds me that we have to think **inviting Jarmila to the Sofia meeting**. **Please to Sona to invite her and ask whether she can come**. We shall wait for her answer before buying tickets.

Sona: I will write right away. Also please send me arrival/departure dates and names of people who shall come, then I book the hotel.

Saturday, April 30, 2011, 09:10 – 10:20

Sona: Greetings from **Jarmila, I received an answer and she agrees with the dates Dec. 7-11, so we can fix this date and can buy the tickets.**

Andreas: Two things for today: The **homepage**, and the **structure of the materials** (not so much the structure of the e-book).

Jan S: **I will send you an email now with suggestions**, then we can all look at it and you can give comments.

Jan S: There is some **problem with the name DynaMAT, as it is a name of a company, and it is registered trademark**.

Andreas: I would suggest **Vladimir to ask EACEA in Brussels on how to proceed**, as it may be a legal issue. Particularly we should then not name the homepage www.dynamat.eu.

Vladimir: I think I like **logo_1, the first, most, as it has warmer colours**.

Oleg: The letter M would be hard to recognise in the logo if you do not know the name.

Sona: **I think that logo1_1 is too heavy**, i.e. the black block is too big. Maybe we can use just the outline.

Andreas: **I like the ones in logo1, because of the logo itself and the writing**.

Jan S: There is also **the one in web_DM1, that combines the logo with the square root and the writing font**.

John: How about some floating effect?

Oleg: I think **we shall use the web_DM1 logo**, and then **ask Jan S. to make some suggestions with respect to animation. Agreed**.

Vladimir: Now we can turn to the homepage. Let's **start with math2earth homepage. Going through homepage and commenting on necessary changes**.

Saturday, April 30, 2011, 10:35 – 11:20

Andreas: How about **using the style file from the last project?** I will of course add a possibility of links. Maybe we should not put the links in yet, otherwise they are broken when we upload it on the homepage. **Agreed**.

Oleg: I see **two possibilities of organising the e-book**. **One is according to countries**, as each partner knows their materials best, and can better organise it. The **other possibility is that we have the topics from the application and sort it according to this**.

Andreas: The three **categories would be visualisation, simulation and modelling, and creativity**.

Oleg: There also may be additional ones that could bring new ideas.

Vladimir: I think we may use beamer-tex style, so as to be able to do presentations.

Andreas: I would suggest to **leave the style-file for the e-book**, and may then use the beamer-tex, or the PowerPoint, for the course materials.

Freyja: It would be good, because then they can print the materials as hand-outs, and also use the PowerPoint or beamer-tex for presentations.

Sona: We also can **use materials as videos**, e.g. for instructions.

John: I think we also may do that.

Andreas: Thank you, we that we conclude the discussion. Just remind you that the materials are to be in "almost-finished" status by August 15, and to send Vladimir the receipts for the travel etc.

Selection decisions for material

- **DK - GeoCaching and its use in DK, use of Google Earth and Google Maps, excell applications of probability**
- **BG: use of geogebra, connection of art and geometry, extreme values in geometry, predator – pray models**
- **IT: Napoleon problem, bus problem and other problems from samorai period, dynamical systems (periodic triangles)**
- **IS: euclidean eggs, applications of geogebra: associating the slope of a tangent to the derivative, applications to integration.**
- **AT: optics, extreme values in geometry, Fractals – limits of series, GPS – aviation (interpreting graphs), GPS – GeoCaching (geometry)**
- **SK: clock problems, problems from geometry, analysis: long sums, car weels, GPS in nature, didactic games**

Summary of decisions:

- **Target groups for materials may differ between teams (primary, lower and upper secondary students)**
- **Keep variety of topics and mathematical levels**
- **E-book format probably pdf**
- **SK team: Use and develop logo similar to this:**

- **Important to send financial information and copies of evidence (tickets, boarding passes, receipts [if not on daily allowance base]), modus will be clarified**
- **Next meeting in Reykjavik, Iceland, September 2-6**
- **Meeting after that in Sofia, Bulgaria, December 7-11**
- **Materials in "almost finished state" to be sent to everybody by August 15**