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External Expert's Opinion on the Activities of the Colabs Project in Slovakia

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Introduction

The mission and aims of the Slovak partner in the Colabs project according to the project's website and to the other documentation was the following:

1. to create an educational program called "Fractions"
2. to Create concrete activities for final users (aged between 4 and 15) using Fractions and other networking projects (microworlds) as an educational tool
3. to specify from the technical point of view possible problems in Imagine
4. to solve the encountered problems (like communication through network in Imagine)
5. to extend existing features in Imagine

Other partners had to prepare additional forms of communications between teachers and also between pupils. But the main goal was to encourage teachers and students to make the approach and process of study more creative.

Fractions (Sk)

One of the most difficult parts of the subject of mathematics at a low level in primary school is unquestionably fractions. The juniors find hard especially to handle the basic mathematic operations with fractions.

The aim of creating the program "Fractions" was to give to children a tool that is able to visualize fractions. The other thing was to establish in children's mind a clear idea about fractions, what they are for, how good they are and what kind of problems we can solve by using fractions. Basically to give them opportunity to play with fractions, investigate them and by this investigation create their own ideas about the use of fractions.

Because of these reasons there are in Fractions many possibilities for the representation of the fractions. There are examples from the easiest ones like pies or chocolates then a bit more mathematics like decimal number, percentage, fraction, ratio and a number on the number line. The most attractive representations are made from various pictures and group of pictures. In these the user is able to create own pictures. Also there is a possibility to change every component's size, colour or other attributes. The user can also use own backgrounds from picture file for a particular page or by using the drawing tool to draw own pictures. For a certain component the user (usually teacher) is able to change the various additional properties, like:

- to enable/disable the possibility of changing the attributes for a component (if disabled then children can use the component, but not able to make any changes in it)

- to anchor component which means that the children are not able to move it
- to hide some component so the children can not see it
- to enable to show the fraction as a mixed number or in its basic form

One of the strongest features of this program is the possibility of making one component dependant on the other component. For example if we create a pie component and we make it dependant on previously created percentage component then 50% will be shown as one half of the pie. When we change the number of the percentage, the pie component will be automatically changed to the relevant form.

Other features are operators (arithmetic and comparative), evaluation components, defining areas, generators and text fields. By using these features the teacher is able to create various activities or even a whole set of activities in one page. By creating more then one page of activities the teacher is able to produce a book. Within a book the user is able to add, delete, move, copy, paste and save the activities.

In principle the user has two choices how to use this environment. On the one hand he is able to investigate how particular enabled features are changing, what kind of relations are between them etc. The teacher in this case prepares the activities. On the other hand pupils can solve the prepared tasks and they will have them interactively assessed.

There are several tutorials made for this program. They are made (similarly as the program itself) in several languages and are very helpful in order to learn to use the program. The whole program is really user friendly.

If we think about the application of this program we can see many possibilities especially in the cooperation of children and mutual learning. For example one child can prepare a task for the others or eventually everybody can prepare an activity for the others. All of them have the same tool to do it, but naturally they prepare different tasks. And it is more exciting if you have to prepare a task for your classmates. This will save much time also for the teacher, because he will only have to coordinate the whole process of learning. And additionally children will find out that mathematics is the same in the whole world.

In general the program “Fractions” is an astonishing tool, which you definitely will use if you are a teacher. And obviously children will like it very much.

Networking projects (Sk)

Within the Colabs project there were made several networking activities designed for pupils at the primary level. They can play together various well-known games or just to have an activity like drawing together. For example Memory game, Ludo, Five in row, Cards and Painting. All these networking games are designed to make a significant development in children’s cooperation and collaboration.

For example in Cards game every player is able to assign a special word in his own language for a particular picture. So it can be used for learning foreign languages when the two players are from different countries. Similarly it can be used for learning attributes for some nouns. The first child assign to the noun a completely different attribute than the second one, so they a learning together new words. Other possibility is learning diminutives. So the program is not design only to learn foreign language but also to improve in mother tongue.

In the Memory game, where the children are looking for the same couple of pictures, we can use not the same picture in one couple, but for example a picture and its description in words, similarly using one word in two different languages etc. Up to this time, there are limited number of words and pictures used in the program. It would be great to have an extension where the teacher will be able to add new words and new pictures to the program.

The Ludo game is a little bit different from its widely known version on the table. In this case the players gradually have to solve several tasks on their way to finish. There are questions to be answered on various topics. Unfortunately again there are only limited sets of questions. To be able to add new questions would be really great.

Game Five-in-row does not need any introduction. We all know it very well. It is very exciting to play with somebody in completely different edge of the world.

Painting as a networking project gives children an opportunity to paint various pictures together. They are motivated to cooperate and create some kind of work together. It could be also very exciting.

All these projects clearly indicate a special way how to prepare the learning process during the usual lessons in schools as an exciting game. Obviously we need to find a method how to produce more and more games of this kind.

Networking tutorial (Sk)

This tutorial is designed for users of the program Imagine. It gives to the users an illustrative demonstration of how to communicate in real time through the network in the environment of Imagine. The reader will find out how to

- send and receive messages through Imagine
- send commands and execute received commands
- find IP address of a remote computer
- connect not only two but even more computers at the same time

All this is happening because of one sole reason. To help programmers to create such network based activities, which will help to support the cooperation between the final users (in our case the final users are children). The document is written clearly and transparently. It uses illustratively copied screenshots so without any problems will understand it even a very beginner programmer in Imagine. You do not need to have a special course on network to be able to create networking projects with this tutorial. It is great!

Translator (Sk)

This program is designed for developers of Imagine projects. It was developed because of necessity of sharing projects made with Imagine between different nations (using different languages). The whole Colabs project was a good example of this case because it was based on mutual cooperation and communication between several nations. The platform of the project was Imagine which enables to write programs in different languages. Let’s think about a program written in Portuguese. If there is a Slovak programmer who wants to make any changes in the source code, he will hardly be able to even understand the code. It is obviously written in completely different language. So he

would have to ask his Portugal colleague to change the whole program at least to English. It would be a really complicated form. But here comes the Translator. It is able to translate the whole Portuguese program to Slovak. There are obviously several difficulties in this kind of translation. Basically it is technically impossible to have 100% correct translation. Therefore the authors describe the Translator as a half automatic translator, which needs some kind of interaction between the programmer and the program being translated. At some stage the Translator will stop and ask for the meaning of some codes.

Even with this we can consider that the Translator is a strong tool for translating the written programs. It makes the possibility of cooperation even wider and far over the limits of the language made boundaries.

Creative Writing (P)

At the first sight with this program you can not be sure why the developers named it as Creative Writing. You are looking at the drawing panel. But after a few minutes it was clear what is going on. Behind this name is hidden a really nice environment, which the children are able to use for various multimedia writing like creating various tales, stories and narrations.

Children are able to create one page after the other. On every page they can locate a little character and also other pre defined objects. If they want to, they can create their own. It is similarly with the background. The program will offer some backgrounds to use which the user is able modify or create own pictures.

The writing will be more attractive when you will use some sounds (even your own), for example spoken words or other interesting sounds. To every page the user can create a special sound and also he can use it for every object on the page (like girl, dog, cat, fridge etc). If you are happy only with writing and drawing you can use a bubble for every character on the page with some text in it. Even more, some of these texts will be read by the program itself which is sometime much fun.

But what really captivates the user is the possibility of having a network connection with other users (not just one, but even more). So there is the possibility for children to work together from all over the world, which is really exciting. Can you imagine a better motivating task for cooperation? I do not.

Unfortunately there also several mistakes in the program. I would like to mention some of them like unfinished localization of the Slovak version; when you want to load your own sound there are Portuguese names of the buttons; sometimes it is hard to control the program (a help would be very useful); when you are a beginner, you will definitely need help from somebody else (more experienced).

Taking everything into consideration we have in Creative Writing a tool, which is waiting for a really good future and I am sure we will later on hear about the program a lot. It is a good environment for every age group – not just children but also adults will find it very motivating. And finally it is not necessary to talk about the cooperative dimension of this tool. It will do it for itself when you first try it with somebody else through network.

Colabs portal (Hu)

A very big part of the Colabs project is situated on the webserver in Hungary. It is called Colabs portal. This complex of websites is designed for children engaged in Colabs project. They could have lot of fun with this website.

First of all the designers wanted to teach children how to use Imagine and become familiar with this environment. Because of this reason there are several simple games (call microworlds). Every visitor of this website is able to try these games and play with them. Beside this there is a huge online Imagine course for children. It is designed for total beginners with this program, but I am sure that also advanced users will find it very useful and will learn lot. It will show the visitor how to create basic programs with Imagine by showing tremendous number of screenshots. Step by step following every lesson the visitor will learn to use the program and after 2 or 3 courses will be a familiar with it.

Other possibility for the portal visitors is to join in some kind of pedagogical and educational activities. There are many small projects, which can be downloaded from the website, or even played straight through internet. These projects usually have some output in picture. The user can upload his pictures to the forums, so every visitor will see his work and will make some comments on it. They can suggest how to continue with this work, what kinds of changes there are needed and how to make it better. Basically through these forums there is an interaction between the visitors of the website. In some way it is a kind of chat through the Colabs portal, which is very popular among the youngsters nowadays. But in this case the reason for chat is quite clear. For example, there is an activity on the portal, where the children have to draw a simple face with a particular kind of expression. Then they will upload their work to the forum and wait for the reaction of the others. After reading the comments he will possibly create another one etc. Or other possibility is that somebody else will try to make a better one and upload it to the forums. Basically the authors of the portal wanted to give the children a chance for communication. Unfortunately the language is a big problem. The children are obviously not able to communicate with every members of the portal, because they know only their mother tongue. Usually the case was that they commented only the pictures of their compatriots. But the portal is prepared to give opportunity also for learning another language. There are some projects designed especially for this (Cards for example). Also there is a big Encyclopedia which is made in several languages. It is basically a dictionary of the most used words in every language. The communication was the one of the principal goals of the whole project. It seems to be fulfilled, but also there is a need to make some little things better.

For example there is a big problem with character encoding on the website. The portal is accessible for every nation worldwide, but not all of it was show correctly everywhere. There were several mistakes in Slovak version. Another problem was in really complicated uploading of children's work. Without the help of the teacher it would not be possible for them. They had to use clipboard, then save to disk, then upload it to the portal from the disk.

Finally we can consider that Colabs portal is an ideal place for meeting with another young people who want to have some fun and to learn something useful at the same time.

Visual Modeling (Pl)

This activity was designed for the oldest pupils (in terms of Colabs project). It is based on programming in Imagine and involves a relatively demanding part of Mathematics – goniometry. There is a collection of 16 tasks. They consist of

- introduction to the problems – presentation
- a simple example of the program with picture
- assignment sheets

The goal usually is to use (modify, fill in) somehow an example of procedure to create the shown effect. The pupils have to investigate the dependency of goniometric and trigonometric objects on each other. Then these dependencies they have to use in practice.

As a mathematics teacher I can clearly imagine how this kind of activity (solving concrete interesting tasks) is able to attract the students' attention and motivation. And this is our goal. The colleagues who used these activities in mathematics lessons say that the pupil's interest of the task was incomparably higher than in the usual way (without the motivating factor)

Conclusion

At this stage we have to conclude that behind every activity is a hidden tremendous work which is not possible to see at the first sight. At first we must not forget the localization of all documents, websites and programs to every nation's language involved in the Colabs project. The translation was made in Colabs portal, Networking projects, Visual Modeling, Creative Writing, Visual Fractions and every user's manual. Also we must not forget about the work of developers of the programming environment of Imagine who enlarged the potentials of Imagine in order to work more comfortably (component NetObject and others).

At the end of the project there were several experiments done. Mostly they were local experiments and usually they confirm the interest of children in about mentioned products and also legitimacy of the designed activities. Basically all activities encourage children for cooperation and also show that the cooperation is a distinguished part of the process of learning. Additionally the children learn a new dimension of knowledge which is the dimension of team work. We have to say that in the countries of European Union is this style of work very usual. Unfortunately it is not very common in our schools even this is quite attractive between the pupils.

The Colabs project prepared many new possibilities for learning, starting with use of ICT in process of learning, continuing with communication and collaboration of children and ending with concrete tools which hopefully will be used soon in schools. Obviously not only in schools involved in this project, but also in other schools. In the coming period it is very important to find a good way how to distribute these projects. A good example is coming from Britain where a publisher was find who will distribute the program Visual Fractions. It still remains a question whether it is possible to find a publisher also in other countries particularly in Slovakia. In this country we are not used to this commercial approach in case of distributing pedagogical software. In Hungary they have to solve the problem with the Colabs portal how to keep it live after the finishing of the whole project. Up to this time in the activities on the Colabs portal took part only the participants of the project.

It is clear that the teachers would be definitely interested in every small project like any of the above mentioned. I am sure about it, because I follow every activity in Slovak internet pedagogical websites like teacher's websites, www.infovek.sk, teleprojects etc. Many of the teachers already understood the necessity of the change in the process of learning and they are prepared to react. Unfortunately they are lacking of the technical a methodological support. I would like to hear that all of these projects and products will be distributed to those who are desperately waiting for them. They are our children.

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