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CREATING LOCALIZED REPOSITORY OF DIGITAL TOOLS AND RESOURCES

***Summary**: The Macedonian Ministry of Education has set forth the goal of appropriately integrating Information and Communication Technology (ICT) into the public school curriculum. To realize that goal, teachers and students must be provided with appropriate tools and resources. To be meaningful, these resources must be "localized" to students' culture and background. Software must use students' native language; use local terms (geographical, historical, traditional); and use localized digital resources (text, pictures, audio, video, multimedia presentations, web pages). It is therefore important to begin to create a repository of digital tools and resources useful for the learning process. World Learning Macedonia has started an "Integrating ICT into Curriculum" program. As result of the workshops and cooperation between faculties from Macedonia and George Mason University in the United States, we have begun to organize such a repository. This report will describe the process of creating digital resources for Macedonian pupils and teachers.*
***Keywords**: Technology integration, Digital repository, Teachers curriculum,*

INTRODUCTION

Primary education in the Republic of Macedonia is going through a dynamic period of change. This change is characterized by a shift from traditional teacher-centered instruction to student-centered methodologies. In order to provide the students with appropriate and meaningful instruction, ***a transformation of the educational environment, educational goals and methodology of teaching*** must occur.

The main goal in that transformation should be the development of new curriculum and resources which are appropriate and available to all students.. Curriculum, technology and methodologies must be adapted in order to progress towards achieving the educational goals.

Students usually first experience the use of technologies at home. Schools can leverage students' interest and awareness of technologies by providing digital resources designed to enhance curriculum.

The integration of Information and Communications Technologies (ICT) in the classroom is a integral facet of the **National program for educational development in Republic of** Macedonia. Today's teacher must not only possess knowledge of new pedagogical and technical advances, but must also have access to appropriate digital resources.

Recently we have witnessed the infusion of technology into the schools. Computers and Internet access have given teachers the *tools* of technology but have not addressed the *application* of tools in teaching and learning.

While there are many programs addressing staff development and training across the country, little attention has been paid to the development of digital resources for newly trained teachers to use. Localized resources, situated in the Macedonian language and culture, provide digital content which can be accessed and used by teachers. These resources provide the context in which new technological tools can be used in the classroom.

In our paper we present a description of a project started in August of 2005 called "Creating Localized Digital Repository" (CLDR). The second section of the paper describes the need for CLDR. Here are shown expected goals and conditions that must be realized. In the third section, the process for CLDR is shown step-by-step. Results are presented in the fourth section. Conclusions and plans for the future are given in the last section.

NEEDS AND GOAL

The project was organized to address the needs and interests of primary school teachers. These teachers are fundamental to the improvement of education. In primary schools, students can take advantage of reforms in the use of technology at an early age.

While primary school teachers possess creativity and the potential for reforms, they lack the digital resources necessary to realize change. It is this deficiency of resources which hinders progress.

This project sought to initiate the development of a digital repository to facilitate the inclusion of ICT in schools. This requires the utilization of a cadre of specialists trained to identify, evaluate, and develop appropriate digital resources. This task logically falls to the students in the Pedagogical Faculties. Concurrent with their studies, students can work to develop the digital resources and Repository. The utilization of students engaged in their pedagogical studies ensures sustainability of the project. Students in informatics courses will initially work on this project. Later, pre-service teachers, trained to identify and develop digital resources, will join the project.

Our action plan is based on teacher's needs and has the following **main goal:**

Create a localized repository of digital tools and resources.

In order to achieve this goal, students in Pedagogical Faculties must:

- be qualified to create teaching and learning materials in electronic form;
- be able to generate electronic based materials for individual learning;
- know how to recognize the pedagogical value of specific software
- adapt specific program packages to be implemented for achieving educational goals
- plan cross-curricular activities in accordance with school curriculum implementing ICT

The digital repository will take the form of a web site created, hosted, and maintained locally. This web site will contain links to digital resources, downloadable software, presentations, and other materials. ***All of these materials will be made with resources from student's work.***

To achieve our goal, it will be necessary to identify teams of informatics professionals, staff from Faculties of pedagogy, especially professionals from didactics, informatics and Edu-

cational technology. These teams will be supplemented by teachers who will become able to use the repository in school practice.

It is critical that the repository be appropriate and accessible to teachers. Thus, a number of attributes have been identified as critical for the success of the project:

- **User friendly**

The repository must be accessible to teachers who do not posses a high degree of technological skills. The interface for the repository must be clear, easily navigated, and easy to use for teachers as well as students.

- **High level of usability**

A good teacher can take a bad piece of software and make it good, a bad teacher can take a good piece of software and make it bad.

The usability of every learning resource is important to the success of this project. The evaluation of usability will be done in two phases:

1. Resources will be evaluated by the teaching stuff in Pedagogical faculties and, if the evaluation is positive,
2. Resources will be evaluated in use in schools.

- **Well organized**

Resource organization, as a data, in the repository should be at highest level and high technology should be used (Learning Objects technology for example).

The categorization and storage of the data should follow the latest standards which will make access to the resources easier. This will enable the use of resources from other compatible repositories.

- **Ability to accept new resources created by others**

The repository must contain a mechanism where resources can be submitted or recommended by students, faculty, and teachers in schools. These resources will then be evaluated according to identified criteria.

- **Ability to get new versions of the resources published before**

As resources are improved, following new achievements in science and informatics, steps will be taken to ensure that the resources are evaluated regularly for currency and relevance.

PROCESS AND TECHNOLOGY

The procedure for creating resources begins with defining the topics to be dealt with.

It is important that a variety of topics in many different curricular areas are represented in the repository. A 'general' repository would be all but unusable for the classroom teacher.

Additionally, it is necessary to create templates for resources in each topic. The use of templates ensures that the repository will maintain a familiar appearance to aid in navigation and use. This will also facilitate the inclusion of new resources as they become available. At this stage, it is necessary to create ***guides for creating, rubric (for technical evaluation), and rubric or survey (for methodological evaluation)***. Coming out with this criteria will increase the quality of resources.

Sample of rubric for technical evaluation:

POWER POINT PROJECT - EVALUATION FORM

Name of student/s that prepare presentation	
Lesson for Grade 1-4 or Preschool	
Subject:	
Topic:	

Mark (X) the number that represents your attitude.

0	Not present
1	Non satisfactory
2	Satisfactory
3	Good
4	Very good
5	Excellent

AUTHORITY		**Yes/No**	
1	There is contact information for the author/s of this presentation.		
2	Presentation has a title slide.		
3	The presentation includes slide numbers and date of creating.		
SCORE FOR AUTHORITY(5 for Yes and 0 for No), max 15p			
CONTENT		**Rating**	
1	Is the content appropriate for your target audience?	0 1 2 3 4 5	
2	The project has a clear goal related to a significant topic or issue.	0 1 2 3 4 5	
3	The project presents information in an accurate and organized manner that can be understood by the intended audience.	0 1 2 3 4 5	
4	Information included has been compiled from several relevant sources.	0 1 2 3 4 5	
5	Is there real depth-of-content (vs. information that is limited and superficial)?	0 1 2 3 4 5	
6	There are no errors in spelling, grammar and punctuation and correct font family and (Macedonian) support is used	0 1 2 3 4 5	
7	Information is clear and concise on each slide.	0 1 2 3 4 5	
8	All images move properly in relationship to the text.	0 1 2 3 4 5	
9	Is the vocabulary appropriate for pupils? (Is the language similar to your text books or other classroom materials?)	0 1 2 3 4 5	
SCORE FOR CONTENT(max=45p)			
MULTIMEDIA			
1	Students have used multimedia in creative and effective ways that make use of the particular strengths of the chosen format	0 1 2 3 4 5	
2	Sounds are used properly and add to the meaning of the text.	0 1 2 3 4 5	
3	Presentation has multimedia elements in a balanced, attractive, easy-to-follow format.	0 1 2 3 4 5	
4	There are some technical problems, but the viewer is able to follow the presentation with few difficulties.	0 1 2 3 4 5	
5	Presentation has transition set up in appropriate way for the audience	0 1 2 3 4 5	
6	Presentation has animation set up in appropriate way for the audience	0 1 2 3 4 5	
SCORE FOR MULTIMEDIA(max=30p)			
NAVIGATION			
1	Students have used navigation in creative and effective ways	0 1 2 3 4 5	
2	You can easy use navigation buttons to switch between slides	0 1 2 3 4 5	
SCORE FOR NAVIGATION(max=10p)			
TOTAL SCORE (max 100, pass if up than 80)			

The next step is actually creating the resources, using different tools: text processors, image/graphic editors, spreadsheets, **multimedia presentation programs, web editors, flash editor etc..**

The process should start with a minimal amount of resources, basically referring to a limited number of tools (for example: programs for multimedia presentations). We suggest using the

least quantity of tools for creating resources which will enhance the quality and create a well-based repository.

The worthy resources according to the criteria will be published on the Internet, and provide basis for further work. As for the ones which won't be accepted, the whole procedure will be set up from the beginning.

Next, there's the phase of practical evaluation in elementary schools. During this stage the teachers will decide whether to accept the resources or not. The resources which will not be accepted or need improvement, should follow the plan which suggests a complete invocation of the procedure, as well as marking.

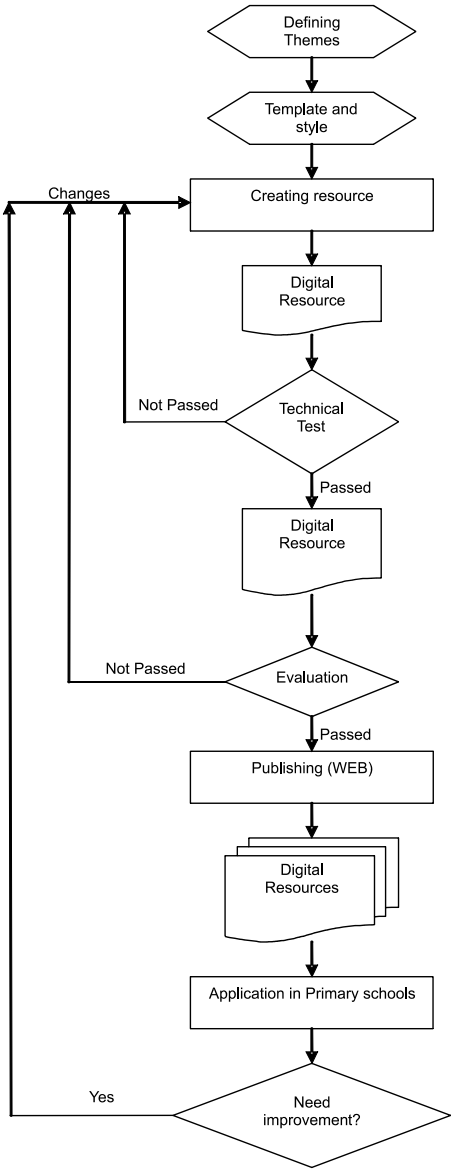

Fig.1 Process of Creating Localized Digital Repository

RESULTS

The realisation of this project has started during the study year 2005/2006 and the results have occurred within the first months. The hardest part was to begin the work, for the whole project in the first stage is basically voluntary work. As direct executives of the work itself, the 1st and 2nd year students attending the subject "Informatics Technology" at the Pedagogy faculties in Stip and Skopje, were the ones to realise it.

The students have accepted the idea of working on multimedia presentations as student projects. Thus, they comprehend the techniques involved in multimedia presentations using Power point, do cross-curriculum activities consulting competent teachers in each topic dealt within the resource and improve their "search the NET" skills. It is strictly said that working on resources should involve multimedia, sound, picture, short films and hypermedia, in order to accomplish a satisfactory level of interactivity.

The topics for production of presentations are taken from the National Education Curriculum (Program) for 1-4 grade and pre-school education. The students (in pairs or in groups of three) chose what to work on, according their wishes and preferences, gaining a 70 % coverage of the predicted topics. The students' obligation during the process was to use the actual (current) textbooks for 1st to 4th grade students, to consult the teachers and professors competent for the specific methodology dealt in the project and of course, provide extra material found on the Internet.

This way, until December 2005, about 200 student projects have been created, About 85 of them have passed the primary technical evaluation, and the rest were returned for finishing. In January and February 2006 a methodological evaluation was done and 30 worthy presentations were found, which were selected for Web publishing. The publishing is due to be done in March 2006 on the following address http://www.pfst.ukim.edu.mk/repository .

The final result of managing the basic skills for computer usage through using of Power Point, graphics programs, finding Internet resources (clipart, sounds, texts) and implementing hypermedia technique by the students was excellent. There was a great motivation for work and give a way to the students' creativity.

CONCLUSION

A necessary component for the process of integrating Information and Communication Technology (ICT) into the curriculum is to have appropriate tools and resources. To realize that goal, teachers and students must be provided with appropriate tools and resources. In this case it means that tools and resources must be digital and to be meaningful - these resources must be "localized" to students' culture and background. Project "Creating Localized Digital Repository" (CLDR) was started in August 2005 and this paper our results are shown.

Hardest step was to start voluntary based project. We started and as result cooperation between Pedagogical faculties from Macedonia and George Mason University in the United States, we have begun to organize such a repository.

At the moment our repository is small and need to improve quality. Our next steps are to create Web Portal with resource database, discussion forum, and technical support. This Web Portal will include part for young learners and for teachers. Zoran Zdravev, MSc,

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