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Multimedia schoolbooks in education in primary school

Introduction

One of the main trends in the area of modernizing both the contents and conduct of teaching is the utilization of new forms of teaching materials and media, which chiefly include various kinds and formats of working sheets, presentations, audio-visual records, animations and multi-media and interactive textbooks conceived in a complex way.

If we look back into the past, we can see a gradual development and modernization of the teaching process. Innovation is mainly apparent in the field of teaching methods, didactic aids and didactic techniques. The arrival of new media and hypermedia has their interconnecting and incorporating in common teaching as a result. The technologies of today enable us, teachers, to present an innovative approach to knowledge to pupils. We can let pupils search for and process information from the whole world or we can show them in the classroom processes and experiments that are hard to simulate. By means of modern didactic technologies we are able to involve pupils in the action, where they are no longer just passive listeners.

1. Structure of the multimedia textbook

In the Czech Republic there are a large number of both public and private entities that go into creating and developing multi-media textbooks. Didactic contents are mostly prepared by pedagogical specialists from primary schools and universities. The final electronic form is created by teams of professional programmers. Creating these forms of textbooks is relatively exacting from the organizational point of view. Two major publishing houses in this country tackled this difficult task, Nová Škola and Fraus.

Now let's have a look at what a utilized multi-media and interactive textbook looks like in practice nowadays. We can see it as a classic textbook, however, in electronic form. The textbook has a frontispiece and a back page, pages with contents and chapters, pages with didactic contents or a subject index in alphabetical order. The textbook can be divided into a text, graphic, multi-media and an interactive part. Each of these parts, with the exception of the interactive and the multi-media one, can be described using relevant didactic components, which are applied even when standard paper textbooks are evaluated [Průcha 1998].

Text and graphic parts

These parts are the main carrier of information. If compared with a classic form of textbook, we come to the conclusion that the contents of the text part does not differ too much. If contents are changed, it is due to the fact that new information or facts appeared, scientific progress reached another limit, etc. After the introduction of framework and school educational plans, the elements of interdisciplinary relations and environmental and global linkages appeared in textbooks. What is apparent at first sight, however, is innovation in the area of structuring and dosing schoolwork or in the area of controlling schoolwork.

The teacher works with pupils, whose capabilities may differ greatly, especially as far as apprehension, creativity and motivation are concerned. The authors of these modern textbooks respect this specificity and differences in pupils and react by creating textbooks, where the content of the curriculum is structured into the basic part, supplementary part, etc. In this aspect, modern textbook elements are utilized, such as those used in study materials for distance learning. These elements include, for example, pages divided into columns, icons, resolved problems, supplementary texts, highlighting or separation of important passages etc. [Zlámalová 2006].

Multi-media and interactive parts

Innovation in the text and graphic areas concerns standard paper textbooks too. However, the principal difference between a classic textbook and an interactive textbook consists in the presence of new didactic components. At the present time, these new didactic components comprise above all interactive and multi-media elements.

Multi-media elements in textbooks

In order that a textbook is a multi-media one and provides information to pupils through as many information channels as possible (effective teaching), it is suitable to enrich its contents with multi-media elements conceived in a modern way, especially with motivation and teaching videos, animations and sounds. It is always necessary that a given element have its purpose in the textbook. The same applies to pictures and graphics. By means of these elements the textbook imparts such knowledge to pupils as cannot be verified or demonstrated directly in the teaching process (such as a nuclear explosion) or as is presented more effectively in this way (such as an audio record of a native speaker).

Interactive elements in textbooks

The goal of these elements is to make pupils take an active part in the teaching process. Interactive elements can be divided into interactive surroundings and interactive control. Interactive control relates particularly to controlling and control elements in the textbook itself. Interactive surroundings arise when interac-

tive textbooks, interactive activities and interactive and multi-media didactic techniques are used correctly (such as a visualizer, blackboard, voting systems and suchlike). These modern textbooks include presentations, exercises and activities in which pupils and teachers interfere directly and have a possibility of direct editing [Krotký 2009].

2 Teaching using an interactive textbook

At the beginning, it is necessary to realize that the teaching process is very complicated and if we want it to be effective to the maximum, we must use all manner of didactic methods, procedures, aids or combinations thereof. Interactive and multi-media teaching is not just working with an interactive textbook and a blackboard, but mainly combining various methods, inputs and outputs. Consequently, the teacher should not work the whole lesson with a textbook only, but he should use other methods of work too. For instance, if it is possible to carry out a pupil's experiment in the classroom, the teacher should not replace it with a filmed experiment. If the teacher wants to show a musical instrument to pupils, it is better to take it to the classroom and let the pupils touch it than to show a photo and turn on a player with its sound recorded.

Making standard teaching more effective

The possibility of teaching through the medium of interactive textbooks has existed for about 2–3 years at primary schools in the Czech Republic. This system of teaching leans especially on teaching by means of an interactive blackboard and an interactive textbook. Using a data projector, the textbook is projected on a central, frontally located interactive blackboard. The pupils have standard paper textbooks and working copybooks at their disposal. What is important is that the working copybook, textbook and multi-media textbook form a mutually interconnected educational set. The paper textbook is identical with the projected multi-media textbook as far as contents are concerned. If, therefore, the teacher shows a certain page of the textbook on the blackboard, the pupils can see this particular page in their textbooks too. In the case of interactive activities, the practice is such that the teacher starts a relevant activity on the interactive blackboard, where a selected pupil or the teacher himself works with it, and the pupils at desks are trying to solve the same task in their working copybooks. This system has many advantages. In the first place, pupils always know what is just being taught. In addition, they can continuously or finally check their solutions. And we should not forget that working with an interactive textbook also functions as a kind of motivation element in teaching. When working with the frontal interactive blackboard, the pupils can take turns, the teacher gives the floor to them and thus enables them to express their views.

A frequent question asked in the course of preparation of future teachers is whether an interactive blackboard or application is capable of correcting possible

mistakes the pupil made in an exercise. An interactive blackboard or textbook does not have an evaluating or controlling function in teaching. Such functions pertain especially to the teacher, possibly to pupils.

Digital teaching project [http://www.vzdelani21.cz/]

What would teaching look like if we replaced paper textbooks and working copybooks as well? Portable computers and microform readers of electronic books turn up around us more and more frequently. The prices of such appliances become acceptable for the wide public. Presently, appliances of the Apple Ipad type and its clones with diverse operation systems are coming up. It is common nowadays to buy at Amazon.com an electronic book and a microform reader, whose service life is up to one month. In view of such a rapid technical development we could afford to replace even paper textbooks. However, it is a question whether it would be good. There are a lot of rights and wrongs. We assume that paper books will disappear in the course of time and will only remain collector's showpieces. Children will be going to school with just one physical book – tablet, which comprises all textbooks and dictionaries used, the Internet etc.

At the present time, a project entitled „Education 21" is running in the Czech Republic. It is a project of purely digital teaching. Within the framework of it, there are real experimental groups of pupils, where one group learns in a standard way, while the other makes use of pupil's laptops with installed multi-media textbooks. Up to the present, the computer has largely served for playing games, entertainment and communication. Now the computer is transforming into a teaching aid, directly in the school environment. Within the framework of this project, selected primary schools cooperate with commercial entities (HP, AV Media, Fraus publishing house etc.), while research is led by the Teacher Training College of Charles University in Prague. Currently, some 140 pupils and 3 primary schools are involved in the project.

The aim of the project is to explore the possibilities of interactive teaching and to compare effectiveness with the classic type of teaching. Another aim is, for example, to develop a methodology and to verify possibilities in utilizing modern information technologies. For the time being, the following facts are ascertained or partially confirmed [http://www.vzdelani21.cz/]:
– the teaching process using interactive tools is more attractive,
– interactive surroundings make it possible to duly highlight information and to improve the concentration of pupils,
– more effective revising and practicing,
– checking results more effectively and a possibility of immediate feedback to the teacher.

The results are still not provable, nevertheless the project goes on and more schools will join it next year. Next to using new forms of textbooks and interac-

tive blackboards, the use of other kinds of didactic technology is watched, such as voice systems or wireless control tablets [http://www.cdmvt.cz/].

Conclusion

New technologies are coming very quickly, while the introduction of them into the teaching process is substantially slower. Not every change must lead to better results and a more effective teaching process. Before new technologies are introduced into teaching, a particular alternative must be subjected to pedagogical research and great care must be taken when introducing them. Pupils are changing. They normally use computers and social networks and programme mini-robots. It is more and more difficult to draw the attention of these children by standard teaching. It is clear, therefore, that even in the field of education we must keep up with new trends.

If on the one hand children are changing and we adapt teaching accordingly, on the other hand we must „adapt" teachers to. Continuous education of teachers in the field of information technologies must be one of the priorities. We can still see lack of interest on the part of some teachers to innovate their teaching in this way. Luckily, the number of such teachers is decreasing.

Literature

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Abstract

In the article the authors describe selected specific issues of interactive and multi-media teaching at primary schools in the Czech Republic. They focus on and describe above all the present state in the area of creating and using multi-media textbooks. They compare two different approaches to interactive teaching. The first approach consists in combining adapted classic textbooks with a multi-media textbook used simultaneously. The other approach, which is in the phase of research for the time being, consists in complete replacement of paper text-books with their interactive and multi-media variant.

Key words: multimedia textbooks, interactive textbooks, teaching equipment, multimedia instruction, preparing teachers.

Abstrakt

Autoři v článku popisují vybraná specifika interaktivní a multimediální výuky na základních školách v České republice. Zaměřují se a mapují především současný stav v oblasti tvorby a využití multimediálních učebnic. Zabývají se srovnáním dvou odlišných přístupů k interaktivní výuce. První způsob spočívá v kombinaci uzpůsobených klasických učebnic se společně používanou učebnicí multimediální. Druhý způsob, který je zatím pouze ve stádiu výzkumu, spočívá v plném nahrazení „papírových" učebnici jejich interaktivní a multimediální variantou.

Klíčová slova: Multimediální učebnice, interaktivní učebnice, didaktické pomůcky, multimediální výuka, příprava učitelů.

Edukacyjne zastosowanie podręczników multimedialnych w szkole podstawowej

Streszczenie

W artykule autor opisuje wybrane kwestie związane z wykorzystaniem w nauczaniu multimedialnych i interaktywnych programów dydaktycznych w szkołach podstawowych na terenie Czech. Skoncentrowano się głównie na opisaniu obecnego stanu w zakresie opracowywania i wykorzystania podręczników multimedialnych. Przedstawione i porównane zostały dwa podejścia do zajęć z wykorzystaniem opracowań multimedialnych. Pierwsze polega na połączeniu w procesie dydaktycznym tradycyjnych podręczników z multimedialnymi opracowaniami dydaktycznymi. Drugi wariant, będący w fazie badań, to całkowite zastąpienie klasycznych podręczników wyłącznie podręcznikami multimedialnymi.

Słowa kluczowe: podręcznik multimedialny, podręcznik interaktywny, wyposażenie dydaktyczne, naucznie z wykorzystaniem multimediów, przygotowanie nauczycieli.