INNOVATION OF FORMER COURSEWARE

Jana Kapounová, Kateřina Kostolányová

ABSTRACT
In the project *Theoretical concepts, sources and technical background of e-learning* we want to explore the possibilities how to transfer the teaching aids created within the sixties up to the nineties into electronic version and to evaluate the efficiency of the procedure. In the paper we present partial results of our project. The methodology of transformation can help authors of (not only e-learning) study materials, they may benefit from the old instructional programmes.

KEYWORDS
Information and Communication Technology (ICT), Programme Instruction, courseware, e-learning

INTRODUCTION

A research team from three Czech universities is working on the project. Its aim is to summarise the theoretical concepts, to analyse sources of the content, to assess the methodological background and to search for technical solutions how to transfer some titles of the current courseware into electronic version and to evaluate the efficiency of the procedure.

Technology makes some activities easy, especially when an action repeats many times, it is monotonous for a person to concentrate, and so he or she leads to make a lot of mistakes. Such type of activities can be found in educational process as well. Technical support was used in mathematics, natural sciences (physics, chemistry, …) and in technical disciplines. At present we could hardly imagine a teacher who explains, trains and tests his or her students in logarithmic slide rule or searching in goniometrical tables. Calculator or computers very quickly without a single mistake, now pursue routine, long-winded and tedious calculations that used to be done by learners. The problem now lies in correct task definition, how to explain to the machine the assignment that has to be solved. We can use computers when doing experiments and measurements as well. Nowadays our task is how to implement computer technology in instruction: in learning, drilling, repetition, testing.

In the sixties of the last century computer based learning was very popular with teacher trainers and teachers themselves not only in the world but also in our country. The first computers were introduced to schools, along with plenty of computer programmes, though with trivial technical solution but rich in the content and ideas. Their authors were often computer fans who were also teachers with necessary experience. All the above-mentioned aspects led us to rethinking the value of teaching materials, since some of them show a very good didactic level.

"Old" teaching aids refer not only to printed materials, but also to instructional machines, simulators, diaphones and the like.

PROGRESS TO DATE

In the course of our project solving we carried out:

- collection of suitable courseware, all data are saved in designed database

- some techniques inevitable for transformation of selected titles
- choice of titles for innovation
- determination of output form for each type of particular courseware
- transfer of courseware
- experimental verification in different types of schools and with different users
- definition of methodology of courseware transformation.

Collection, analysis and compilation of suitable information

We upgrade systematically information about

- theoretical concepts of computer aided learning
- suitable courseware or products for programme instruction
- bibliographic searches.

All the data are stored in the database, which was designed and created in our research establishment. As currently, a strong effort is being made in the field of ICT – aided education in terms of standardization, we are considering standardizing data (some of them at least) and storing them in libraries of educational establishments. One possibility is the digital library DILLEO, which was implemented at the University of Hradec Králové. The metadata of the library DILLEO is based on the specification ARIADNE – *Alliance of Remote Instructional Authoring and Distribution networks for Europe.* The library DILLEO is meant to meet requirements of the university community.

Verification of Transformed Teaching Aids

After the product database had been analysed, the aids were selected for this purpose. Before we started transforming them, we had to make slight alterations to some products while trying to "revive" them. Sometimes, the technical state of the aid or the device where it was carried on did not enable us to update it.

Examples of courseware transformation

Name	**Original Source (Device)**	**Present Medium**
Baroque in Prague	diaphone	CD-ROM
Health Safety and Protection	diaphone	CD-ROM
Czech Language	diaphone	floppy disk
Physics Electric Circuit I to III – Photographic Camera – Microscope – Binoculars – Magnifier – Structure of Atom – Radioactivity	teaching machine KE30	CD-ROM (HTML file)
Physical Laws and Principles I Physical Laws and Principles II	8-mm film 8-mm film	DVD DVD
First Aid	specific courseware	CD-ROM

Pilot Evaluation in Specific Schools

The selected schools in which the above titles were being verified included those in the cities of Ostrava, Prague and Pilsen, both elementary and secondary – grammar schools and apprentice centres.

We devised a procedure of experimental verification of transformed products and a questionnaire for the teachers involved.

The questionnaire consists of

I. Basic questions – they include information about the teacher, school, subject and themes, students, a form of instruction.

II. Questions about the verified product – its content, technical quality, didactic quality, didactic value of the electronic form of the programme. These are the following:

a) questions of the content relevance of the educational programme

relevance, or necessary update of the language and professional lexis, visual part – photographs, film shots, simplified pictures

impact of cultural and social conventions on teaching process

b) questions of recognizing characteristic elements of visual and sound parts in the context of the programme technical quality

quality of the programme in terms of recognizing individual figures and elements of visual and sound components in the context of the technical quality of the programme

quality and recognizing of natural elements, commentary, dialogues and the whole influence of the noise on the quality of the sound component

c) questions of didactic quality of the subject matter presented by the programme

programme quality of teaching communication with learners, feedback frequency – regular evaluation of learners' responses, how the programme deals with an error and its classification

accordance between visual and sound components, if it is an audio-visual product, description and representation of the concept by means of contemporary presentation of the picture (photographs) and the sound (commentary)

as regards a visual product, accordance with and completing the text description of the concept by visual representation and vice versa – description and representation of the concept by double presentation: both by a picture, scheme, and a descriptive text

presence of various indicators and elements drawing learners' attention in the right direction (presence of various signposts, variety in text chains, colourfulness of properties, spatial display of figures in the picture)

clearness of presenting concepts – description of the concept by means of a range of parallel illustrations: audiovisual sequences, photos, simplified images, graphs and charts

coherence of particular themes, hierarchy of educational objectives

d) questions of didactic significance of the programme electronic form

advantages of the electronic form, e.g. accelerated viewing of audio-visual programmes, a chance to get particular still snapshots, easy control and alterations to the content of the programme – e.g. comparison of a typical film and KP8 cassette with DVD medium and its capacity

possibility to stimulate project teaching via the programme as well as focusing the project on the technical process of the original media transform by students themselves

problems at technical transformation which would have to be solved – a lack of experience, or technical equipment

role of original aids as stimuli for designing new teaching aids by teachers

III. In the free part teachers can express their own views and comments, or share experience and observations.

The teachers involved in verifying the transformed titles were very positive, which sometimes gave the impression that they missed „old good" teaching aids. The worse technical quality or „old-fashioned" environment were basically treated with indulgence. Furthermore, they praised the didactic quality of the product. Also, the electronic version of the product is easier to start and navigate.

As regards similar product transformation in their own workplaces, problems would probably appear on entering. E.g. use of old tape recorders or projectors of 8-mm films is no longer possible in most schools, whereas output devices, such as a computer with DVD can be found in most educational institutions nowadays.

Technically speaking, we can conclude that particular courseware

- can be transformed in almost every school, although a certain amount of skillfulness, much time and software are needed, some tasks can be entrusted to students
  Example: soundtrack transformation from old records and tapes, etc. into the digital form (e.g. *.mp3 files).
- can be transformed only in a specialized establishment which is well equipped, and must be done by experts
  Example: copying of old films needs an appropriate projector, cleaning device, digital cutting apparatus, etc.
- must be utterly technically changed, but we will make use of teaching potential, ideas, pictures, sound and text commentaries, etc; some tasks might be done by students, others by specialists
  Example: diaphone-like products, which were initiated by a diaprojector along with a tape recorder, can be transformed by means of some software for making presentations (from MS PowerPoint to Authorware) and then stored on DVD.

The above summary is only the technical solution and after the final evaluation, or possible supplementary questions for teachers, we will accept proposals how to modify and supplement methodological procedures of product transformation.

Problems with copyright

Conversions of instructional packages do not involve only technical problems but also questions in the field of laws (at least the copyright), ethics, contents (at least relevancy to the contemporary school curricula), etc.

Therefore the project study also comprises the interpretation of copyright, especially "Author Law". In addition, the complex of FAQ – frequently asked questions, is being prepared and supplemented all time. Groups of similar problems are consulted with a lawyer and his responses are published (currently on the web pages of the project).

CONCLUSIONS
or **From updated teaching aids to materials appropriate for e-learning**

Possibilities offered by modern multimedia computer technology, computer networks, digitalisation of sound and picture can support courseware innovation. However the question is how to pinpoint further steps of integrating the innovated courseware into e-learning study support.

On the one hand, we encounter a problem of the study texts originally meant to be printed as university textbooks, which are only "turn over" into electronic texts and displayed by means of the respective Learning Management System (LMS). Why? Traditional textbooks are much better, actually a text prepared like this can be distributed by means of Internet and users themselves will print their textbooks or the chapters they are interested in.

Our verification up to now has taken place in traditional class, while teaching from the front.

On the other hand, we face a problem of how the innovated courseware, mostly of multimedia character, can be incorporated into basic educational structures of e-learning, or possibly in the distance study.

This way should be verified more in the future. But that's another story.

REFERENCES

KAPOUNOVÁ, J., PAVLÍČEK, J. Počítače ve výuce a učení. Ostrava: Pedagogická fakulta, 2002 [Computers in Teaching and Learning]

KAPOUNOVÁ, J., PAVLÍČEK, J. Theoretical&Practical Resources of e-Learning. *In* Computer Based Learning in Science. Nicosia: University of Cyprus, 2003.

MALACH, J. Applying Experiential Learning to e-Learning of Adults. *In* ICT in Education. Rožnov: Ostravská univerzita, 2004.

MAŠEK, J., MICHALÍK, P., VRBÍK, V. Otevřené technologie ve výuce. Plzeň: ZČU v Plzni, 2004. ISBN 80-7043-254-3 [Open Technologies in Education]

TOLLINGEROVÁ, D., KULIČ, V., KNĚZŮ, V. Programované učení. Praha: SPN, 1966 [Programmed instruction]

ZLÁMALOVÁ, H. Úvod do distančního vzdělávání. Olomouc: Universita Palackého, 2001 [Introduction to Distance Learning]

Jana Kapounová
University of Ostrava
Ostrava
Czech Republic
Email: Jana.Kapounova@osu.cz

Kateřina Kostolányová
University of Ostrava
Ostrava
Czech Republic
Email: Katerina.Kostolanyova@osu.cz