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CREATION AND EFFECTIVENESS OF EDUCATIONAL TEXTS FOR DIRECTED SELF LEARNING AT SECONDARY TECHNICAL SCHOOLS

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Abstract

This article deals with planned research which is part of a dissertation in the field of didactics with the title "Creation and effectiveness of instructional texts for directed self-learning at secondary technical schools." It illustrates the importance of directed self-learning by pupils and of the creation of high quality self-instructive learning texts for pupils of secondary vocational schools. It briefly characterizes the objectives and research hypothesis, the sample and subject of the research, the methodology and the organisation of the research.

Key words

self-instructional educational text, creation of learning texts, directed self-learning, independent work

Introduction

Textbooks and instructional texts are among the oldest products of human culture and were used long before the invention of book printing. One of the founders of the theory and creation of modern textbooks was Jan Amos Komenský who was the author of the first illustrated textbook *Orbis Pictus* [1]. Written material is still the most common instructional material in the world. In many countries it represents almost 85% of all teaching materials. New technologies occur but they still do not stop the development of written material and do not replace its place in education.

There are several reasons for this fact. For example, printed study material is transferable and relatively long lasting, it can be recorded, archived, and repeatedly used in case of necessity, it is flexible (a book can be used in several ways), and the reader can decide

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the rhythm and speed of reading and can stop at specific texts if desired. Books are used frequently at the present and they have become a natural and indispensible part of education [2].

Progress in informational technology has also brought about changes in the educational system. New forms of e-learning, including distance learning, as well as open education, flexible education, and blended learning have entered our educational system and opened new study possibilities for many students. The core of modern forms of learning is based principally on the use of electronic information and communication technologies (internet, e-mail, fax, mobile phones, video-conferenc es, etc.), however an indispensable role is still played by instructional texts which have been specifically adjusted for these forms of learning.

New interesting possibilities for self-learning by students have been created with the use of a great amount of learning materials instructing the learner as if he/she were present in a traditional lesson. Such educational materials have to be self-instructing and structured in order to enable continuous and systematic study. The instructional texts respond to the variety of educational styles which students prefer and which suit them best. Such texts are used as a basis for directed self-learning, and they are usually accessible either in electronical form, on CD, or on the internet.

Educational texts play a decisive role in the process of education. They are a significant working instrument for students and help for the teacher's work. Several research studies show that it is not the syllabus but the textbook that determines the quality of the educational process [3].

Directed individual work

Directed education is not only aimed at storing information, data, and processes into a child's memory, but it also develops brain skills – cognitive competence. It is a demanding way of learning in which the instructing subject (teacher) has to perfectly master the way of presenting the cognitive competencies; he needs to think over thoroughly the approach to instructing a student and be able to carry it out. It is inevitable that he will come to perfectly know the pupil and his ability to learn. This kind of teaching can be done in various ways – by humans or by computer, but most often through a symbiosis of the two [4].

According to Kulič (1992), the purpose of each test is to make it gradually unnecessary. That means to adapt the learning person into a system of full auto-regulation. At the beginning the student is lead by the teacher who directs the educational activity, but later on the directed learning can have the form of controlled self-education and self-learning [5].

The humanistic approach to education recommends the teacher not do anything that the pupil is able to do alone, because otherwise the pupil's activity is suppressed. During teaching it is more effective to give preference to self-direction and self-assessment as compared to outer control and outer assessment, as the independence and freedom of the pupil is more likely to be fostered [6].

Individual work by pupils is one of the most important manifestations of learning. On one hand it has the character of a teaching method, and on the other hand it has the character of an organisational form because it can be situated in various teaching environments (e.g.

workshops, laboratories, etc.). It can basically fulfill all didactic functions through specialisation. Its centre lies however in the fixative and applicatory phase of teaching. A common feature of all kinds of individual work is that they lead to self-instruction and self-education. The assumption is still however the long-term and systematic guidance of the pupil by the teacher [7].

"The decisive period for the development of independence and for the forming of relevant working and studying habits and techniques is the period of secondary education" [8, p. 9]. That is why it is so important that pupils start soon enough to develop their ability for individual learning, to look for new information, to solve problems, etc. In this period great attention is also paid to self-instruction and self-learning.

The importance of self-instruction and self-learning through individual work by pupils can be summarized into the following points:

- Individual work should help pupils to develop their skills in such a way that they are able to solve tasks with the help of basic theoretical principles (individually with initiative and self-confidence),
- The pupils should form the ability and a life long need for self-education by means of individual work,
- Through the control of results and the course of individual work, deep and long lasting knowledge can be acquired through the control of results and of the individual work. The managing of controlled individual work by pupils stimulates continuous learning,
- Control of individual work enables the deepening and acceleration of feed-back between the pupil and the teacher.

Self-organisation of individual pupils' work and its control is a significant problem for the realisation of self-education and self-instruction. It is necessary to elaborate detailed plans of individual work for pupils in the specific professional subjects, and to coordinate them mutually from time to time [7].

A teaching system will show its effectiveness as long as one of its elements is individual work. The basic objective of individual work is the discovery, re-creation, and creative application of knowledge. This requires inner activity by the student in relation to selection, transformation, and hierarchical aligment of information. The student requires knowledge individually and he also individually reproduces knowledge and applies it mainly when solving problem tasks [9].

Creation of self-instructional teaching texts

From the pedagogical point of view self-instructional teaching texts are means of teaching and self-learning which have to fulfill two main functions: informing and regulating. Texts are a source of knowledge and information and concurrently a guideline for how to actively work with the presented information/knowledge, i.e. how to organize and control the learning process of the students with a tendency to gradually increase the level of students' auto-regulation, with the aim of achieving the defined objectives. A consequence of high quality instructional texts for distance learning is the fact that even in developed systems of distance education, which typically apply multimedia, up to 94 % of learners use printed instructional texts. Therefore only by their high quality and ability to better guide self-learning can self-instructional texts for distance education compete with traditional instructional texts [10].

Instructional texts for directed self-learning must first of all be [11]:

- **Self-instructional –** i.e. study materials must provide everything (predominantly motivation) without the help of a teacher, enabling students to achieve defined goals of the educational programme (teaching unit). Self-instruction materials must attract the interest of the learner and "draw" him/her into the topic. It is therefore important that authors are aware of students' approach to learning and that they know their "style" of learning, motivation, and interests.
- **Structured** so that they initiate and enable continuous and permanent study, and they must be comprehensive, well-arranged, attractive, etc.

Instructional texts for directed self-learning are different from simple textbooks and scripts. Especially notable is the text division (doses), its graphical lay out, and relief through pictures, schemes, graphs, different symbols, and illustrations [12]. The self-instructional text has to direct the individual steps of the learner in his/her education. It therefore must provide the learner with everything necessary for effective teaching/learning.

According to Gazdíková these are [13]:

- clearly defined long term and specific goals and their consequent correlation with the content,
- utilization and connection to students' previous knowledge,
- respect for the learners' different needs,
- a sufficient number of practical tasks for practice and fixing of acquired knowledge,
- a sufficient number of explanatory examples,
- questions and exercises for self assessment,
- interesting and attractive material from the content and formal point of view.

Since self-instructional teaching and learning materials are used for self-study they must be written on a high qualitative level, they must respect all previously listed requirements, and more attention must be paid to the dimensions of comprehensibility [14].

Research focused on the creation of self-instructive texts

Currently, pupils are under the stress of a great amount of information from different subjects and sources. Therefore it is necessary to be flexible in the utilization of different methods. It is also necessary to provide pupils with appropriate didactic means which should simplify their process of learning, be it visualisation or practical experience which would foster the acquisition of new knowledge.

A textbook often does not express the topical importance of a given issue. It is often extensive and not interesting and it often happens that there is no textbook to the subject. It is then replaced by books which do not deal with the topic enough or too extensively and the pupil is lost in the web of interlinked knowledge which is then demotivating, and the student does not want to continue reading.

The creation of "tailored" teaching texts should help the pupils to learn easily, to shorten the total time needed for preparation at home, and to create more space during a teaching unit for practical examples and illustrations and a more detailed explanation of new topics. In studying the self-instructional texts that have been created, the pupils should start studying

from the beginning of the reading. The text will become interesting to them because it will be written in such a way that they learn the consequences, it will be completed with pictures, control questions, and many elements that will facilitate learning.

It is very important that secondary school pupils are prepared for their further education. This occurs when they are capable of reading with comprehension and acquiring various reading strategies which they can use not only at school but also in their everyday life.

It often happens that secondary school graduates continue their studies at a higher level and they are not prepared for the system of studying which requires their independence and individuality. Such practical preparation should start from the first moment they begin studying at a secondary school when the teacher first leads and directs the students and continuously strengthens their ability to manage their self-instruction and self-education.

With the creation and use of self-instructive texts something new is introduced into the teaching process of pupils. It is something new, something interesting and practical. At the same time the students' reading skills will be supported as well as their comprehension from the start of reading, and this is a basis for their further education.

Planned research on the creation and effectiveness of teaching texts aimed at directed self-instruction at secondary vocational schools

The main objective of the research is to verify, through experiments, the effectiveness of teaching the subject Ecology Basics at the secondary vocational school in Kysucké Nové Mesto with use of the created texts which enable effective self-instruction.

In order to achieve the set objective, the following partial objectives have been defined:

- to create self-instruction teaching texts for a selected part of the subject Ecology Basics,
- to verify by experiment the effectiveness of teaching the selected part of the subject Ecology Basics through use of self-instructional teaching texts by pupils attending the first year of Secondary vocational school in Kysucké Nové Mesto, and to compare traditional teaching with teaching when self-instructional teaching texts are used,
- to determine the approach of pupils towards the evaluated way of teaching the subject Ecology Basics,
- to evaluate the subject matter and issue recommendations for the introduction of self-instructional teaching texts in the subject Ecology basics.

The subjects of research are:

- effectiveness of teaching the subject Ecology Basics with use of the created self-instructional teaching texts,
- knowledge and intellectual skills of pupils from Year 1 of the Secondary Vocational School in Kysucké Nové Mesto,
- time for individual preparation at home (preparation of pupils for the lesson of Ecology Basics) during the period of experimental way of teaching
- approach of first year pupils to the subject Ecology basics with the usage of created self-instructional text books.

Main hypotheses of the research:
Teaching of the subject Ecology Basics with use of the created self-instructional teaching texts is more effective than traditional methods of teaching.

The term *effectiveness* (more effective teaching) stands for:
- better knowledge and intellectual performance by pupils belonging to the experimental group,
- less time needed for preparation at home
- prevalence of a positive approach from pupils towards the verified methodical teaching system

In order to verify the main hypothesis, we will observe and evaluate the following hypotheses:

H1: Pupils from the experimental group (EG) will achieve better results in their final didactic test, which will be aimed at knowledge and intellectual skills and will be taken at the end of experimental teaching, than pupils from the control group (CG).

H2: EG pupils will, at the end of the experiment, state in a questionnaire that they needed less time for preparation for the lesson on Ecology Basics than CG pupils.

H3.1: The comprehension of self-instructional teaching texts will be assessed positively from the pupils.

H3.2: The level of comprehension of the created self-instructional teaching text assessed by a Cloze test will be higher than 65%.

H4: The attractiveness of the created self-instruction teaching text will be assessed by pupils predominantly in a positive way.

H5: In questionnaires of EG pupils, a positive evaluation of teaching through the use of the created self-instructional teaching texts will prevail over the negative ones.

The basic unit of the selected samples for research is formed by pupils of first year classes at the Secondary Vocational School in Kysucké Nové Mesto (on average 270 pupils in the relevant school year 2008/2009). The pupils are divided into classes according to specialisation. There are approximately 30 pupils in one class.

The selected group (research sample) will consist of pupils from six classes with an average of 30 pupils in a class. The assumed number of respondents is 180. The experimental group will be formed by three classes and the control group by three classes as well.

The following research methods will be used for verifying the research hypotheses aimed at the effectiveness of created self-instructional texts for the subject Ecology Basics in comparison to traditional methods of teaching:
- *Natural pedagogical experiment* – main research method *Didactic tests* – verification of H1,
- *Questionnaire* – verification of hypotheses H2, H3.1, H4, H5
- *Cloze test* – verification of hypothesis H3.2,
- *Expert method* – additional method used for verification of H3.2
- *Statistical methods of processing the research results.*

Conclusion

At present the research is in the phase of preparation and the execution is planned with the start of the academic year 2009/2010. With the preservation of the stated research conditions the achievements will be accomplished which can help with verifying the validity of the stated hypothesis. We assume that the quantitative and qualitative analysis of the research results will enable us to propose recommendations which will improve the quality of teaching the subject Ecology Basics in Secondary Vocational Schools.

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