DIDACTIC FEATURES OF EDUCATIONAL SOFWARE IN TEACHERS' OPINION

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Abstract: *As a result of the research, it has been hierarchically determined which of the characteristics of the book in question in the teachers' opinion are most important and less important. It has been shown that the characteristics which influence teachers' opinion on the didactic process are as follows:*

1. *Ergonomics.*
2. *Self-education with the use of didactic programs.*
3. *Substantive correctness.*
4. *Stimulation of interest in the subject.*
5. *Possibility of smooth running of the didactic process.*
6. *Ability to simulate phenomena and processes.*

Keywords: multimedia, multimedia didactic software, didactic.

INTRODUCTION

The media are now seen as a major factor leading to the formation of a global information society, and a characteristic feature of human beings should be the ability to select and process information. The lack of such skills is contemporary illiteracy (Walat 2007: 65).

An extremely important and yet distinctive feature of didactic work in the form of multimedia didactic software is the individualization of reception, which is accompanied by an increase in the ability to establish contact with the sender. There are also greater opportunities for creative processing of information by the recipient in processing finished texts, but also creating new ones by using, among other things, animations, graphics and video sequences. A separate, broad but significant, aspect influencing the improvement of the information received is the reception of hypermedia by its interactive nature, which, by interacting with the

recipient, often makes the message more effective by expressing the same terms with the help of different codes (Walat 2007: 65).

The pilot studies aim to characterize multimedia didactic programs, to determine which of them are more or less important in the view of vocational classes teachers. They will also enable the didactic process to run more effectively and efficiently. The above mentioned characteristics of didactic multimedia programs have been pinpointed to the creators. Further research can lead to enhance the theory of multimedia didactic programs and e-textbooks.

MULTIMEDIA TEACHING PROGRAMS IN THE TEACHING-LEARNING PROCESS

For many years such authors as Juszczyk (1997: 17), Walat (2007: 97-125), Lib (2012: 5), Ciesielka (2013), Myers, Halpin (2002: 133-140), Ashvini (2012: 33-36) and others have emphasized that a program that is well-developed in terms of content and didactics has the potential to increase the assimilation of presented content by a multi-sensory impact on the learning brain. This influence can be expressed as influencing the learners' brains by:

- visual field– graphics, colour scheme,
- hearing perception – sound, music,
- movement perception – tracking of movements visible on a monitor, animation, film,
- speech field –communication by messaging,
- somatic perception –carrying out instructions, exercises, simulations, etc. (see Gajda 2010: 21).

The concept of multimedia education is preferred by a large number of educators. It is also reflected in the core curriculum of general education for primary and secondary and upper secondary schools. In each case, there are numerous advantages to using multimedia.

With reference to Rogulska's innovative teaching aids (2012: 25-26), the following features of multimedia education are mentioned:

- it causes a change in the very important aspect of psychodydactic learning, because often the level of motivation of the learner is changed, for which the use of multimedia is very attractive during school activities where there are other forms of communication besides speaking and reading,
- such a form of teaching requires modification of the way teachers work – it often requires more involvement, use of imagination, a creative approach; there is the possibility of common (teacher with student) creation of teaching materials,

– didactic programs provide the opportunity to individualize education (by selecting the educational pathway that the student follows in the program itself and by the pace of work, the choice of media presentations– text, teacher's voice, animation, film, simulation, etc.), which may positively affect the uptake of knowledge.

A didactic program is any scientific study that addresses specific problems in the pedagogical activity of teachers. Its main purpose is to define the method and form of application of pedagogical factors in order to optimize pedagogical activities in order to optimize activities in view of the adopted objectives. These programs are essentially a subsystem of the education system of a given field of education (Walat 2007: 57).

Apart from the pedagogical aspects of multimedia didactic programs, they contain two important groups:

– substantive – correctness of the content of the presented information,

– ergonomic – technical solutions adopted in the program, including text clarity, presentation format, colour scheme, layout and size of the interface, program colour scheme, font selection and size, screen layout, ease of use, intuitiveness of operation,

PRESENTATION OF THE RESULTS OF PILOT STUDIES

Taking into account the aforementioned features of didactic software, the following categories of features were considered in the study:

– substantive merits,

– ergonomic,

– stimulating interest in the subject matter,

– possibility of efficient flow of the didactic process,

– self-study with the use of didactic software,

– possibility of simulating phenomena and processes.

Each of these categories is described by ten specific characteristics that formed the basis for constructing the Q-test in which the surveyed teachers indicated what they thought were the most important and those that were least important.

CHARACTERISTICS OF THE STUDY GROUP

One hundred and twenty teachers participated in the research working in basic vocational schools, technical schools and Vocational Training Centres located in the city of Rzeszów were involved in the research; they were teachers of both

theoretical and practical subjects. These teachers used multimedia teaching software to present information, develop specific skills, and simulate industrial phenomena and processes. A large number also used control blocks included in the program for verifying the level of assimilated knowledge as well as simulation tests to determine how a student behaves in a particular professional situation.

Teachers working in vocational education took part in the study. In the overall group of teachers, a small majority were male, 52% of the respondents.

Most of the teachers were young, 58% under 40 years old, which seems to have been beneficial for the research.

From the observations of the people who took part in the study, it was noted that the younger teachers were more likely and willing (16%) to fill in the test presented electronically than the older teachers. This may be due to the fact that it is this group that more often and more willingly uses computers and computer software in their work, and also used computers while studying at university, so their fears are smaller and their readiness to use such a form of work is greater.

As far as work experience is concerned, there were 15% more teachers who had been working in education for more than 10 years than teachers working less than 10 years. So they were young teachers with more than 10 years of work experience. This leads to an important conclusion that further research needs to be scaled up, as they probably were teachers with a little over 10 years of work but no more than 15years.

Among those surveyed 53% were teachers of theoretical subjects, for which multimedia teaching programs are primarily used as teaching aids to convey information in the form of text, commentary, animations, films, and control blocks with less frequent simulation of phenomena and processes. Programs that simulate phenomena and processes are most often used by practical vocational teachers. These simulations may involve measurements, breakdowns, design of production or operation of equipment. The group of practical vocational teachers is 47% of all respondents.

ANALYSIS OF RESEARCH RESULTS

The results shown in Table 1 show that the most important qualities were those that were related to the ergonomics of the didactic programs (B), followed by self-study (E), and only in third place to the correctness of the content (A). Since substantive merits is in the middle of the hierarchy of qualities, it can be said that the substantive significance of the didactic programs is of medium importance. Another surprising result is that features related to the possibility of simulating phenomena and processes (F) in turn are, according to vocational teachers, the least important feature group. It would seem that substantive merits is the most important feature of all for all types of education. On the other hand, in vocational

training, it is also important to be able to simulate phenomena and processes that students can meet in real-life situations and which, due to different conditions (e.g. degree of complexity and price of equipment, scale or process hazards) they cannot carry out on real systems. The ability to perform simulations is also one of the characteristics of the didactic programs, which significantly differentiates them from traditional didactic means based on written or visual text, and is also a more advanced form of knowledge transfer than animation or film. In addition, if we can say that learners, apart from knowledge, acquire skills through the use of didactic programs, they acquire them mainly by running simulations, such as device diagnosis, mechanism assembly, chemical process, heat treatment and so on.

Table 1.

The most important and least important categories of features of multimedia didactic software

Categories of didactic features	Determination of the main characteristic	Average Q-test indicator of the given feature
Ergonomic	B	5,24
Self-study with the use of didactic software	E	5,17
Substantive merits	A	5,12
Interesting subject matter	C	5,05
Possibility of efficient flow of the didactic process	D	4,94
Possibility of simulating phenomena and processes	F	4,83

Source: *Own Research*

In the case of the analysis of the significance of specific features, the most important opinion of the respondents was the presentation of issues using modern visualization techniques. This feature belongs to the category of features resulting from software ergonomics (B). In second place, one item higher than in the category of features, there is a specific feature related to the correctness of the content (A). It follows that, although this particular feature is important in the opinion of the respondents, the other characteristics related to substantive merits were considerably lower. In third place, we see a feature related to developing interest in the subject (C), while the lowest is a feature resulting from the ability to self-study using didactic software (E), although in the case of feature categories this feature took second place before the correctness of the content. This means that

while this particular feature was considered by teachers to be of little importance, the other members of this category rated very high.

Table 2.

Key features in a given category

Categories of didactic features	Determination of the main characteristic	Average Q-test indicator of the given feature
Presentation of issues using modern visualization techniques	B	8,13
Show the practical usefulness of the issues shown	A	8,05
Innovative form of classes makes the students more eager to participate in the classes	C	7,48
Introduction of exercises in less standardized form, such as simulations of real activities and actions	F	7,40
Student time discipline during the solving of tasks	D	6,65
By using the software we shorten the learning time	E	6,42

Source: *Own Research*

Teachers do not think that the most important features of didactic software, which like school textbooks and other teaching materials are teaching tools, is the aim to impart certain and flawless knowledge. Knowledge, in addition to developing substantive content, shapes the professional language of students and their communication skills by developing the vocabulary that belongs to a particular field in the learning lexical resource, but also develops understanding of the vocabulary and skilful use of it. Professional use of vocabulary on the one hand involves decoding of information, e.g. in instructions: for service, for current and periodic maintenance, equipment repairs, occupational health and safety, etc. It also involves encoding information by building and communicating messages to other people associated with a specific profession, such as the transmission of certain and faultless information on breakdowns, ordering of parts, performance of duties, etc.

SUMMARY

As mentioned above, a didactic program is any scientific study constituting a subsystem of the didactic system of a given field of education. And from this point of view it should present the correct scientific knowledge of the subject matter of teaching. Most important is the ergonomics of the program, which included the following features:

- presentation of issues using modern visualization techniques,
- use of only colour illustrations,
- application of correct elements of computer typography that positively affect the student's eyesight,
- layout of the screen that is organized and easy to use,
- work environment based on colours that do not excite emotions,
- presentation of information in a variety of forms,
- adaption of the presentation to the student's perceptual abilities,
- the interactive nature of hypermedia,
- editing of messages – communications,
- messages transmitted through a variety of forms, not only using text, but also illustrations.

As can be seen, teachers place a lot of emphasis on the form of transferring information, not necessarily on the content itself and its correctness.

The results of these studies are consistent with research conducted by W. Walat [2010: 155-157] on the relevance of the characteristics of traditional school textbooks. There, the teachers who took part in the research also recognized the qualities that reinforced the informative function of the school book, so they focused on the form of the message and elements such as infographics, colouring, typographic layout of the pages, transferring the substantive merits of the content presented to the background.

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