VIRTUAL VISUALISATION OF LOGICAL FOUNDATION OF SUBJECT MATTER IN EDUCATION I. (THEORY)

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Abstract

Due to the non-existence of universal body of instruction, which would be acceptable by every pupil or teacher, it is still relevant to look for new educational systems, which could help all schoolchildren to understand standard learning material well and preserve its basic content in their memories. What we have in mind is a teaching approach, which utilizes active teaching forms and methods, and thus it creates better conditions for individual student work. Simultaneously it neither requires "revolutionary changes" in traditional methodology nor is economically demanding. According to our opinion, scheme using application of visualisation of logical foundation of a topic meets these criteria.

Key words: logical foundation, virtual visualisation

Resumé

V príspevku je predstavená virtuálna forma vizualizácie systému logickej štruktúry učiva. Dôraz je kladený na analýzu predností virtuálnej formy vizualizácie systému logickej štruktúry učiva pred tzv. tradičnými printovými formami.

Kľúčové slová: štruktúra učiva**,** virtuálna forma vizualizácie

1 Introduction and research objectives

Our contribution arms to focus on the fundamental questions of using visualisation of material's logical foundation in schooling and, at the same time, to map its theoretical resources from the point of view of a scholastic practice.

The structure of the foundation consists of a definite set of features, which depicts main ideas of a certain topic. Basically, it is a unique model presenting the primary points of the introduced theme. The foundation of subject matter can be visualized in the following forms:

a) graphic form – e. g. study material (worksheet), wall picture, simple transparency, composed transparency, use of magnetic board, filmslides, videotapes ...

b) computer (virtual) form – multimedia educational program, hypertext, www pages, multimedia sound commentaries, ...

Under the term "graphic form of logical foundation of subject matter" we understand visual presentation of a set of thematic main points and relations between them, creating a coherent structure embracing the whole material.

2 Computer (virtual) form of logical fundation of subject matter

Visualisation of logical foundation tutored create folloeing general structural visual components (element): mind maps, structured graph; flowchart ; oriented graph; Venns graph ; other types structural components..

We have developed a complete experimental system of teaching (NESV) on the basis of didactical use of graphic visualisation. We have applied NESV in instruction process with a clear objective to compare the effectiveness of NESV with the functioning of traditional training in our schools. We have used two-group project of natural, pedagogical experiment to contrast the two.

In conformity with statistical verification of research hypothesis we can say about NESV instruction the following:

Pupils taught in NESV in our experiment ended up with higher attainments in cognitive learning in all of its tracked aspects (memorization, comprehension and application of received information) than students taught by traditional methods. The achievements of both groups of pupils evidently differed on Natural Science leaving exam for 3rd and 4th grade of elementary school. Pupils educated in NESV evaluated the course of Natural science more positively than students trained traditionally due to the new teaching techniques. Pupils also expressed the opinion that learning in NESV was far more interesting and encapturing than standard instruction could ever be. The pupils taught in NESV acquired more information from 3rd and 4th grade Natural science course in the classroom than the other group. NESV educated pupils recommended the use of this system in other subjects as well. Teachers giving NESV lessons approved of the system and also proposed its application in other subjects.

In our experiment, NESV was more orientated towards humanitarian and democratic principles than traditional methodology.

Because we endeavoured to keep all conditions inevitable for valid and reliable predagogical experiment, we justifiedly assume that accomplishment differences between experimental and control group were established through means of our progress, ie by thoughtful organization of pupils' cognitional activities.

Fig . 1

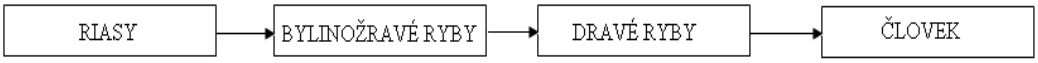

Fig 2

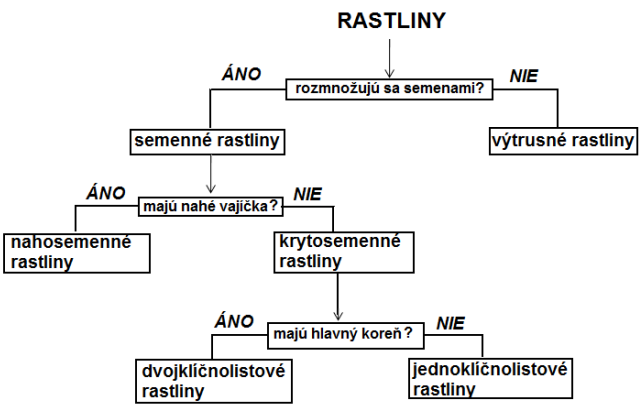

Fig. 3

Skupina	Zástupcovia	Obrázok	Kľúčové slová
ulitníky	slimák		◊ mäkké telo ◊ majú ulitu
hmyz	mucha včela mlynárik		◊ telo sa skladá z hlavy, hrude a bruška ◊ majú tri páry nôh
opaskovce	dážďovka		◊ mäkké článkované telo ◊ na článkoch sú štetinky

Fig. 4

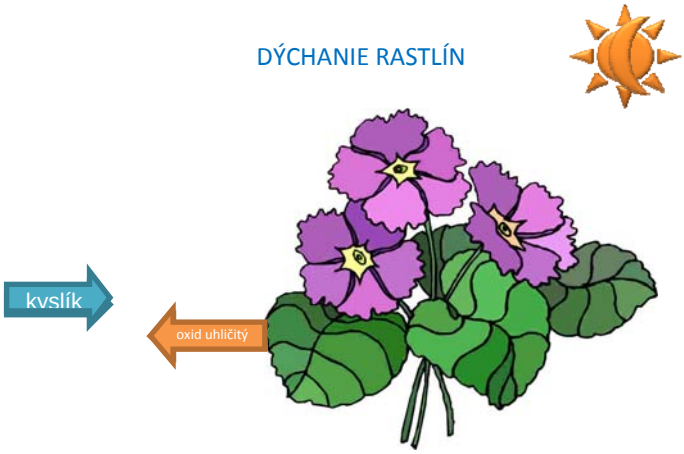

Fig. 5

Príspevok vznikol v súvislosti s riešením projektu KEGA č. 3/4112/06 Tvorba multimediálnych didaktických programov pre výučbu technických a prírodovedných predmetov v základnej škole.

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