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THE METHODOLOGY AND STRATEGIES OF TEACHING INFORMATION COMMUNICATION TECHNOLOGY

Saytiyev O.A
Tashkent University of Applied Sciences, Uzbekistan

Ergashev Sh.N
Tashkent University of Applied Sciences, Uzbekistan

ABOUT ARTICLE

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Abstract: Today the important ICT topics are taught with the help of various methods. Some of them are unsuitable for successful teaching - learning whereas others may bring about success in certain age groups and class types. The application teaching methods are even less elaborate than those of programming and programming languages hence today they can look back only on a history of 10 (or maximum 20) years. However, one can find similarities between them and the methods of teaching programming.

INTRODUCTION

The most important teaching methods of the various fields of information and communication technology (ICT) have already been developed. As ICT teaching cannot boast with a long history, in most cases they have not been clearly formulated, and their formation is not so conscious but rather instinctive, which also results in the fact that most teachers do not use one single method but a sort of blend of methods, where one of them is represented dominantly.

METHODS

This methodological "uncertainty" also ensures that there are teachers who are capable of teaching successfully even when they use a method labelled as being negative below. The negative label can be

principally explained by the fact that these methods do not "automatically" ensure good teaching; moreover, it is fairly easy to teach very badly when one relies on them.

Here in after the most widespread application teaching methods are listed and reviewed: Problem-oriented (It chooses application tools for the gradually expanding series of tasks, or extends the used concepts and functions from the required tool.), Application-oriented (It teaches the skills necessary for creating a certain type of document in the order of its structure and expansion.), Menu-oriented (It teaches application knowledge through an application, or more precisely, through the menu items of the application.), Function-oriented (It defines the general functions of an application system e.g. inserting, correcting, printing, formatting etc. for word-processors, and then links concrete knowledge items to them.), Concept-oriented (It defines the concepts used by an application system e.g. cell, row, column, block, sheet etc. for spreadsheets, and then discusses the functions related to them.),

Abstract tool-oriented (It defines the ever expanding series of abstract tools, e.g. traditional mechanical typewriter, electronic typewriter with correction function, electronic typewriter with line formatting function etc. for word-processors, and then discusses the necessary knowledge for each level.).

The problem-oriented teaching method can well be used in the world of applications, where it essentially means the same as in the world of teaching programming and programming languages.

Let us take application task series that are built on one another, and structure them in a way that one needs newer and newer application knowledge to solve them; but in the meantime one should continually use the previously acquired knowledge. How they are distinguished later can be illustrated with an example taken from word processing:

When tabs are taught, it is not practical to use tasks that concentrate exclusively on them. According to this method, such tasks should be chosen that make students use the opportunities of character and paragraph formatting learnt previously. The continuous use of previous knowledge is vital for profound acquirement; as continuous practice helps perfect acquisition and routine use in the future.

The elements of a task series might support the introduction of various new knowledge items: the knowledge of an application type, its general structure (e.g. What are the necessary elements that an invitation card should contain?);

aesthetic knowledge (What makes an application nicer, more useful, more practical, etc.?)

thinking and planning skills (What are the reasonable steps that should be taken to create the given application? How can it be solved faster, more easily and simply? etc.)

familiarity with tools (What application system functions are needed in order to solve the given task, and where can they be found in the application system etc.?)

The peculiarity of this method could be that it will easily and logically lead students over from one application type to others if the solution of a problem requires a tool that can be more easily realized by using another application program.

The only hindrance of the method – as compared to its programming counterpart – is the lack of necessary task-books. While there are plenty of programming task-books on the market (including one that contains 2000 tasks), either there are not any application task-books or they contain few tasks e.g. there are about 100 for word processing, about 150 for spread-

sheets, and only 15 to 20 for presentation in the books published in Hungary. Moreover, the tasks in these books are not well structured. Teachers who use this method face a serious difficulty: practically, they themselves have to work out everything.

Application-oriented . Actually, it is a variant of the previous method with the difference that it does not aspire to teach every possibility, but it deals only with those that are necessary for an application or a document type. Regarding word processing such can be for example a letter, a cv, a circular/mail merge, an article, a form, etc., and the line could long be continued.

This method makes a characteristic distinction between text and desktop publishing, as the starting document types are different. Desktop publishing deals with newspapers, books,often with large documents. Although a significant part of the related concepts, operations and tools are, of course, identical with the ones learnt in word processing (they can even be created using the same tools), their importance, application frequency is clearly different (e.g. column, table of contents, page numbering, index etc.).

Drawing includes posters, lines, illustrations, logos, mosaics, layouts, maps etc.

Menu-oriented method. It belongs to the negative methods: it relies on the idea that the knowledge of an application is equal to knowing how to use an application system. Regarding this as a starting point, it would like to teach all the items on the menu of an application system, in the worst case following the order of the menu structure. This way it primarily conveys lexical knowledge and routine

usage; whereas it does not consider thinking (planning) or aesthetic and practical layout to be of high importance.

The conditioning involves a sequence of mechanical stimulation presented to the subject, waiting for a response and giving a reinforcement, generating a repetitive cycle of sequences S/R/E/ . . . S/R/E. The relationship of this cycle to a space of virtual training is represented by tutorial-type learning environments of virtual training, exercising and practice, or conditioning software, among others. The above mentioned environments are represented by learning objects, which integrate theoretical concepts with practice making the students learn about real world concepts. These learning objects can be built into the platform through games. Real and complex world cases in virtual spaces such as: “Design and implementation for location-based learning games”; “The use of virtual worlds, with text-based, voice-based and a feeling of ‘presence’ naturally is allowing for more complex social interactions and designed learning experiences and role plays, as well as encouraging learner empowerment through increased interactivity” ; or “Pervasive augmented reality games to experience tourism destinations”.

The Gestalt theory is interpreted as the figure and ground to give meaning to the student's learning, assessed via an observable behavior (a final exam). The Gestalt approach views the conduct as an organized whole. Then, a platform supported by ICTs, in order to comply with processes of virtual training, is a system with hardware and software components, comware (communications) to which it is necessary to add the orgware (human talent) or the organization of the entire system of virtual training; if one

of the parties fails, the system does not work. Considering the virtual space as a whole, the problem-solving teaching methodology supports the more complex learning; this is confirmed by the fact that: "An important educational application of Gestalt theory is in the area of productive thinking (problem solving) ".Thus, in a holistic sense, the virtual spaces of training through the teaching methodologies set out; allow the development of higher learning in the subject.

CONCLUSION

In cognitive genetic psychology the two basic functional invariant of the intellectual functioning of the subject are the organization and adaptation. Assimilation and accommodation are the bases of the adaptation. The constant operation of these allow the formation of units of knowledge calls diagrams, whose development in the time form systems of knowledge and allow the subject to pass from a concrete thought to a formal one, in its biological-intellectual development . One of the support to

better understand Piaget's theory has its basis on the Psychoanalytic theory of transference "...by regarding transferences as schemas in which assimilation predominates over accommodation" . The student in the learning process initially has some specific structures of knowledge. The student interacts with the platform supported by ICT and if she/he understands the structures of knowledge presented in the virtual course, then these diagrams are assimilated into her/his mind. This brings about the change of concrete cognitive structures to formal ones which corresponds to the stages of development of the subject , and the virtual learning of the student. Based on Piaget's postulates, the course of A&C uses the personalized learning supported by ICT student when interacting with the virtual course.

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