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Computer Aided Learning Process

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Abstract

The paper presents selected ways of mental work computer-aided techniques, in order to individualize education and to increase the activity and involvement of learners in the learning process. The effectiveness of the acquisition of knowledge depends mainly on the hemispheric dominance of the brain. *Brainworks* program based on test indicates brain preferences and indicates beneficial techniques and ways of learning. The development of memory functions is followed by systematic repetitions, which guarantee storing information in permanent memory. When learning a foreign language, you can use the *SuperMemo* software, allowing you to add graphics and sound, which further affects the processing and reception of information by the user. During the acquisition of large amount of material, extremely important appears to be, the ability to create verbal and graphic notes in the form of Mind-map significantly different from the traditional linear listing. To accelerate learning process, techniques like quick read with full comprehension in reading, are used. Innovative way in supporting education is a service robot RAL, especially helpful when learning a foreign language because of the audiovisual abilities and full interaction with the environment.

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Keywords: brain lateralization; domination hemisphere; visual sense; auditory sense; mind map, speed reading, didactical robot.

1. Introduction

Development of knowledge and the technology transfer as a result of globalization has made it necessary to adapt the modern educational systems to new conditions. Nowadays, people require innovative learning. Therefore it is necessary to individualize education, increase its effectiveness [1] and increase the activity and engagement of

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learners in the learning process (*Activity Based Training*) [2]. This assumption is based on combining theoretical knowledge with practical, what increases employment prospects. Friendly relations between students and teachers, as well as between the students, provide an opportunity for greater involvement and a desire to broaden their horizons. Additionally, modern methods of education, such as distance learning and multimedia boards, enable the acquisition of knowledge in a pleasant way [2]. Educational materials should be more available and given by practical activity. The students follow the training activities in the sequential structure of the production process. Theoretical content is in this way relevant for the practical tasks in the industrial process [2]. The sequences of training are generic. There are not related to any specific product. Different technological processes can be used for delivery of learning material, thus make more attractive, flexible and engaging, motivating educational training environment. Owing the fact, it may be adapted for use in every country where an industrial production environment is used as a model for training activities [2]. In the time of the training course the product related to an industrial fabrication process will be produced by going through a sequential production process that consists of a number of steps that can be identified and be treated as standalone training elements. Very important in experience-based learning is analyzing by learners their experience. For these reasons, the local industry products can be selected as examples to be utilized in the training process, depending on the preoccupations of the target groups of trainees [2]. The fulfillment of learning can be the implementation of robotics - robotic service (*RAL Robot Aided Learning*), enabling easy and understandable knowledge presentation and language learning [4-7].

This paper investigates the computer techniques that are an important issue in the learning process by allowing support of education by: studying how the brain works [3], improving memory and organizational functions, speed reading process in terms and support teaching using special service robots.

2. Brain Research using Computer Test

BrainWorks is an innovative computer program, which illustrating preferences of human brain hemispheres exploitation, with a multiple choice test [8]. It consists of 50 questions base from which, each time 20 of them is arbitrarily collected for testing.

In *BrainWorks* all questions expressed are presented graphically (Fig. 1a) and textually (Fig. 1b). That allows an analysis of brain lateralization, as well as of preferred learning sensory modality. The result of the test is shown as a percentage on a brain figure direction the result (Fig. 2a) and means the synthetic level of brain lateralization and the auditory and visual and preferences for the learning process [3]. Additionally, the program makes a descriptive evaluation of the test results (Fig. 2b).

The aim of the *BrainWorks* software is to improve the learning level of efficiency by diagnose the preferences of the use of a specific brain hemisphere, and to determine the sensory modality, which is preferred by the brain. The interpretation of the results provides an individual learning style description [3].

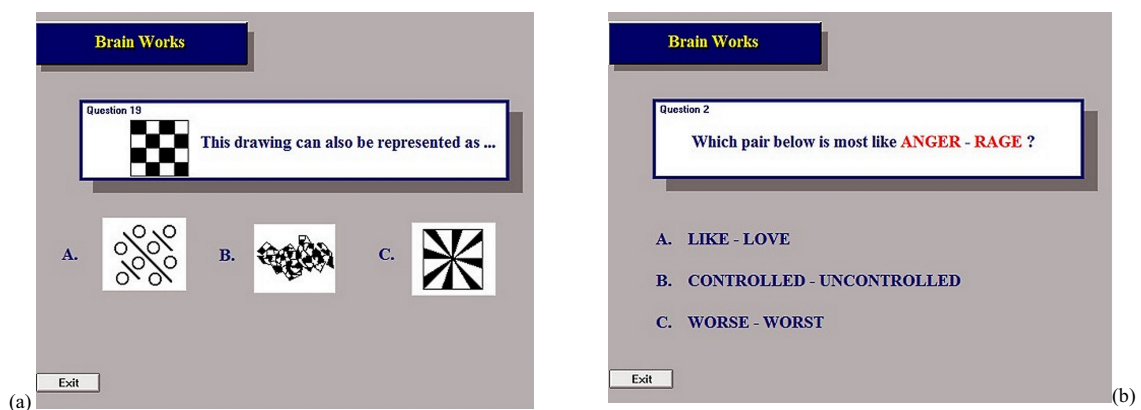


Fig. 1. (a) Example of *BrainWorks* graphic question [3]; (b) Example of *BrainWorks* text question [3]

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