

THE IMPORTANCE OF COMPUTER TRAINING EQUIPMENT

The paper deals with such an approach to the development of the computer training equipment which enables a university professor who teaches any subject to act in the role of a constructor and, if necessary, to change the already existing training model according to his/her own view without any specific computer programming knowledge.

This work shows that the training model should be able to visualize the work of the manufacturing process or technical equipment in an interactive mode and dynamics; to reflect the changes of the ongoing process physical values on an object; to build appropriate diagrams, etc. During the training, a student (a teacher) should be able to switch the initial conditions and parameters of the process course to observe the changes occurring in the object behavior, and to make a rational decision for analysis and management.

First of all, we have to note that the student's learning quality, his/her constant readiness to work properly with the technical equipment and to effectively manage the technological process can be reached through problem-based learning with the help of dynamic training equipment. The situation in a computer training equipment market does not correspond to the current demands. Basically there is a multitude of testing, electronic networks switches, and such technical training equipment which has nothing to do with the dynamic technological processes and represents the static models. As for computer training equipment studying current technological processes of the technical objects, they appear in an insignificant form.

Keywords: training equipment, computer training equipment, dynamic training equipment, training model.

In everyday routine people have to deal with different technical objects and this relationship is determined by the field of human activity. However, despite its scope and destination the object has always been characterized by specific properties which are caused by the peculiarities of the object's current processes.

From an early stage of development, ongoing in everyday activity, people constantly create or use different kinds of models from the environment and its current events and processes. This fact allows to visualize the forms and current processes of the objects.

Modeling is a process of model construction and research based on cognitive method (activity). The modern educational programs pay a peculiar attention to the development of students' cognitive skills[1]. The object for modeling may be an event, a process, a thing.

One and the same object can be presented by different models, while different objects can be presented by one and the same model.

Educational model is a new object that reflects the essential properties of studied objects, events and processes. Modeling has become a very important trend in the field of education in the era of computer technology development.

E-models have successfully replaced mechanic or other types of educational models. In particular, in the studies there have been created computer models, used as electronic visual aids for a training course in history, geography, astronomy, mathematics, biology and others.

The models can be divided into two main groups: objective (material) and informative models.

The objective (material) models describe geometric, physical and other properties of objects in a material way (a globe, anatomical models, crystal-line lattice models, models of buildings, etc.). The objective models (pictures, photos, etc.), in turn, create a visual image of an object which is displayed by any kind of information presentation (paper, photo or reel of film, etc.).

The informative models represent objects and processes by virtual or sign form.

Any kind or form of a model plays an important role in construction and projection of technical equipment, machinery and tools, buildings, electric circuits, etc. For instance, without preliminary drawings that have a kind of model function, it is difficult not only to build a complex mechanism but to produce a simple detail as well.

The development of a science is impossible without those models that are represented by defini-

tions, concepts, theories, laws, hypothesis, etc., which reflect a structure, features and behavior of real objects.

In a specialist's learning process, using computer training equipment, the training and analysis of targeted emergency experiments allow the specialist to develop clarifying and orienting reflex skills in a difficult situation. Besides, the computer training equipment gives the possibility to show physical essence and nature of current processes of an object or technical equipment; their interrelationship and turn, even those minor details that, unfortunately, are usually ignored in practice and might jeopardize a management process of an object.

The computer training equipment can be a great help to provide the analysis of the possible accidents of technical equipment and to plan the appropriate preventive measures to avoid adverse events caused by the accident. Evidently, this can be achieved by an artificial emergency simulation reproduction of the statistical data management of an object or a technical device and the computer training equipment. All these should be performed in the process of specialists' training in the higher education institutions that should be also supported by a curriculum. The curriculum should include the use of such visual e-training equipment in the educational process that would model current technological processes of those objects which belong to a future specialist's field of activity.

The situation in a computer training equipment market does not correspond to the current demands. Basically there is a multitude of testing, electronic networks switches and such technical training equipment which has nothing to do with the dynamic technological processes and represents the static models. As for computer training equipment studying current technological processes of the technical objects – they slightly appear in an insignificant form [2].

First of all, we have to note that the student's learning quality, his constant readiness to work properly with the technical equipment and to effectively manage the technological process can be reached through problematic learning with the help of dynamic training equipment.

The dynamic training equipment should ensure a high quality of imitation, have all the possible emergency situation scenario modeling and be simple to use.

These facts precisely should be considered in the creation of the computer training equipment didactics.

A training model should be able: to visualize a work of manufacturing process or technical equipment in an interactive mode and dynamics; to reflect the changes of ongoing process' physical values on an object, to build appropriate diagrams, etc. During the training a student (a teacher) should be able to switch the initial conditions and parameters of the process course to observe the changes, occurring in the object behavior, and to make a rational decision for analysis and management.

As for a training equipment constructor (creator), he is required to:

- Determine object modeling;
- Formalize the current process of an object;
- Plan the training scenarios;
- Construct a training model.

As it can be seen from the above stated didactical demands, the constructed dynamic training equipment represents much more interesting and complex software product.

It should be noted that the software method of dynamic training equipment construction, which implies writing of a local computer program for each training facility, has long been used in practice. In our opinion, this approach fails to meet the increased demands for dynamic training equipment. Therefore, it is necessary to develop a complex didactic of dynamic training equipment manufacturing, based on development of special instrumental means for a constructor, which would make it cheaper and faster to produce training equipment. Such an approach would be much more effective because in this case a constructor of training equipment will no longer need computer program skills and he will be able to construct training equipment through technological knowledge.

Instrumental means should obviously include those standard elements and technical processes of the technical equipment, which describe the specified management object. Furthermore, it also should include a certain amount of standard mathematical operations and logical order.

Literature

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РОЗРОБКА КОМП'ЮТЕРНИХ ТРЕНАЖЕРІВ

У статті описується підхід до розробки комп'ютерних тренажерів, який дозволяє викладачеві університету, що викладає будь-який предмет, діяти в ролі конструктора комп'ютерного тренажера і в разі необхідності не тільки створювати новий комп'ютерний тренажер, а й змінити вже існуючу модель навчання відповідно до його власної точки зору без спеціальних знань конкретної комп'ютерної програми.

Ключові слова: навчальне обладнання, комп'ютерні тренажери, динамічне навчальне обладнання, модель навчання.

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