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Using of simulation in technical subjects education process

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Abstract

Teaching of technical subjects is a very complicate and complex process. It is demand on logical thinking and imagination. One of the choice to make learning process simplify is using of illustrative examples of the real process. The paper deals with the didactically potential of using simulation software of logistics center. It is used for improving teaching of the modeling of transport processes. Simulation software due to their own variability, construction layout and configuration of applied technology creates the elite place for the evaluation of all parts. Active use of the simulation tool in the teaching of modeling of transport and transport processes is of great importance for understanding of the synergies activities in marshalling yard, intermodal terminal and warehouse. Simulation enables direct visualization and such facilitate the understanding of the activities and feedbacks between them.

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1. Introduction

The education process of professional transport subjects is a very complex system. It takes place under conditions of interaction and the conditionality objective (logical and gnoseological) and subjective (psychological) factors. From the perspective of cybernetic science the teaching can be understood as a kind of governance as purposeful activity aimed to develop the psychical processes and system of control properties. Consequently the factors governing the system (teachers) are rightly set out requirements planning the teaching process. These factors are valid, including a mastery of the subject curriculum and its didactic transformation into the student's operational language. Only after it can be expected that the pedagogical activities of teacher will be purposeful, conceptually clarified, operational, creative and ultimately effective.

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Planning of pedagogical activities is in many ways different compared to the programming of other human activities. This difference is given by the factors that enter into the teaching process. Relatively stable educational objectives and content of the teacher's work will be conducted in variable and always well understood and incompletely recognizable conditions (new pupils, the variety of psychological readiness, new environment, new teacher's experiences, his/her mental condition, etc.). Hereby planning of the teachers activities based on incomplete information and therefore it becomes the role of preparing teachers for the teaching very demanding, requiring significant pedagogical mastery.

Dynamics and variability of the conditions of the teaching process makes difficult the teacher's decisions about the optimal methods, forms and means of teaching. For the reasons outlined above the teachers planning bears activities risk that the proposed procedures do not always yield the expected results. Each teaching unit is set by teachers before the solution unplanned situations requiring swift response and improvisation. Those factors are affecting the attitudes of teachers to planning activities.

2. The research as a teaching method

The purpose of the research is collect of knowledge. This knowledge needs to be searched and discovered. In the fields of engineering - comparing to natural sciences and philosophy - there are found mainly the specific results of the research. These lead to specific solutions, technological process or final products; in contrast with philosophy or the natural sciences, where the research or study is ideally a matter of impartial objective of mind.

The scientific research is the development of means of transport didactics of vocational subjects. Its characteristic features are:

- • Objectivity
- • Verifiability
- • Methodically
- • Reproducibility

Conformably to their aims of transport research can be subdivided to:

- • Basic (this typically takes transport as theoretical science)
- • Applied (uses exact methods and their potential applications of transport)

A solution to difficult problems requires the originality - new approach of mind, a willingness to explore new horizons, maintaining of objectivity, endurance even by failures.

2.1. The problem interpretation

The essence of creative interpretation is the activity, independence and creativity of students. It is a most effective method of learning specialized subjects of transport. The student is an active participant wondering just of acquire the scientific or technical problem (origin, evolution, default hypothesis, critical points, the doubts and weaknesses) with continuous verification of the accuracy of thought. The student identifies the problem.

The problem interpretation gives rise to the original visions, development of critical thinking, creative and adaptive activity of thought. It is a school of thought in front of teacher and student dialogue about the problem.

The scenario of problematic interpretation is based on a listener dragged into the action and his/her active part in a "dramatization" teaching unit. The method requires excellent professional and teaching skills of teacher and also students to be available.

2.2. The autonomous research

The method of individual student's research activities ensures the active participation in the instructional activities. The basis of the method is to solve the defined problem or task, at which the application or reproduction of actual knowledge is not enough to resolve them. The independent research in the teaching of transport subjects also includes the adaptation of knowledge in other conditions (nonspecific transfer).

In this method the teacher plays a role of professional consultant. His/her main task is to prepare some specifications of tasks and problems to be solved. The tasks are compiled to use creative knowledge and skills,

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