

Not at all - we need to make sure that all the information is correct and that the algorithm does not work. The ethereal phase is neither primitive nor practical.

In this regard, assignments to students at the first stage within the described conditions for each didactic situation may include the following groups of exercises: questions-tasks, which lead to the need to reproduce individual elements of knowledge to solve particular problems; tasks leading to the implementation of the need to apply the acquired knowledge to perform systems of practical actions that are different in psychological nature and complexity;

Tasks leading to the implementation of the need to develop certain skills to generalize and automate the acquired knowledge and methods of activity. At the second stage of mastering knowledge within the framework of the conditions described above, for each didactic situation, it is advisable to implement an exercise system in which the method of completing the next task does not always coincide with the method of completing the previous one. Moreover, from the first moment of formation of skills during the study of any topic, tasks alternate with tasks on the previous topics and sections (the principle of continuous repetition). This exercise system also includes tasks that require multiple repetitions of the same operation. This creates the most difficult conditions for students to switch from one operation to another. The implementation of the principle of continuous repetition in this system of exercises is also provided by tasks with missing or conflicting data. However, after such tasks it is necessary to give one that again returns the trainees to them, but at the same time helps to eliminate the mistakes and gaps, helping to fulfill them. In this case, the exercise system should provide for the simultaneous study of two similar objects by comparing them with each other, establishing their similarities and differences. It is proposed to organize the considered didactic situations in systemic-structural didactics taking into account the capabilities of information structures for managing cognitive activity.

Such structures were identified by V.P. Based on the analysis of a typical cybernetic model of interaction between a student and a student based on invariant informational characteristics of the educational process, These characteristics made it possible to single out eight monostructures of information flow management that are actually operating in the educational process, as well as to see their capabilities for managing cognitive activity of students.

As invariant informational characteristics of the educational process were used:

1. Type of information flow control:

- open - this control is carried out by certain predetermined actions applied to the system only when external disturbances from the medium on the functioning system occur.

2. The type of information flow circulating in the educational process. Two types of possible information flows circulating in the educational process are distinguished: dispersed and directed. scattered (non-directional, impersonal) - in this case, information from the source is sent to a certain set of receivers without regard to how they receive it (without an exact address). That is, the same information comes from the teacher to all students in the group, intuitively calculated by the teacher for a certain "average" student, without taking into account the individual characteristics of each. Directed (individualized) - here the information from the source is sent to a strictly defined single address, taking into account the features and receiver capabilities. The work of a tutor with an individual student is a typical example of the implementation of a directed information flow in the educational process. It is in such a situation that the information comes to the student, taking into account his individual characteristics. In this case, the student goes firmly along the path outlined by the teacher to the learning goal, which ensures a significantly higher learning outcome.

3. The method of managing information flow:

- manual - here in the educational process, the teacher's personal capabilities come to the fore (his speech, ability to demonstrate, use facial expressions and gestures, etc.);

- automatic - here in the educational process can be used information technology tools and tools that work on the principle of feedback.

Depending on the possible combinations of the types of information flows, types and methods of managing them, the following information structures for managing cognitive activity of students are identified today:

1. Open control dispersed information flow, carried out manually.
2. Open control dispersed information flow, carried out automatically.
3. Open control of directional information flow, carried out manually.
4. Open-loop control of directional information flow, carried out automatically.
5. Closed control of scattered information flow, carried out manually.
6. Closed-loop control of scattered information flow, carried out automatically.
7. Closed-loop control of directional information flow, carried out manually.
8. Closed-loop control of directional information flow, carried out automatically.

Information management structures are implemented in the educational process in different ways. The first and second information management structures are implemented through lectures or the traditionally accepted explanation of educational material. The third and fourth information management structures are carried out in the course of individual work of students with specially prepared educational text. The fifth and sixth information management structures are implemented during the teacher's work with small study groups at seminars or workshops of various types and purposes. The condition for the implementation of the seventh information management structure is the work of the teacher individually with each student. Involving the eighth information management structure involves the mandatory use of an automated learning system.

In addition to information structures for managing cognitive activity of students in systemic-structural didactics, much attention is paid to focusing on the need for students to solve a number of cognitive tasks and the right choice of teaching methods.

In other words, when developing a training methodology, one must take into account that the linking of the considered factors among themselves cannot be accidental. Within the framework of each of the didactic situations described above, a well-defined consistent task must be solved, a well-defined management information structure must be involved, well-defined teaching methods used, etc.

Based on the fundamentals of systemic-structural didactics, we note that in addition to the above, the construction of a system for monitoring the progress and learning outcomes and the organization of students' independent work as organic elements of a holistic educational process are very important for the development of teaching methods. In this regard, when building a control system, one should keep in mind, firstly,

the need to achieve its specific goals (statement and an objective assessment of student knowledge, updating and consolidating the learned educational information), and, secondly, the need for solutions with its help the general tasks of the educational process as a whole (the formation of students' motivation for learning, the development and updating of their operational structures of thinking, etc.)

Developing a control system must be understood, according to V.N. Efimova and M.R. Kudaveva, the specifics of the hierarchical tree of goals characterizing control (63, 83). Based

on the research results and, based on the possible control functions, as we have already noted, two of its types are distinguished:

- ascertaining
- corrective.

The main task of ascertaining control is to obtain an objective assessment of the results of completed stages of training, and the tasks of corrective control are updating and consolidating the learned educational information, motivating students to study work, developing and updating their operational thinking structures and others

mental qualities and properties. These tasks can be solved using a specific technique for constructing systems of stating and

corrective control, built on the basis of system-structural didactics.

Objectification of the results, stating, control, implies the implementation on an objective basis of three components

u procedures: highlighting what should be monitored, measurements highlighted and measured measured.

The first is solved in the course of setting the learning goal, thanks to the selection of training material (clarification of the list of training elements) using modeling.

The second is solved by measuring the quality of knowledge of students with the help of success tests.

Didacts under success tests mean tasks for the performance of activities of a certain level in combination with a standard for its implementation (15, 17). In this case, the standard should contain all the operations necessary to complete the task, located in the desired sequence, and the correct answer. Performing the test, the learner, while working on the task, prompts the actions applied and the results obtained in stages in a fixed form (records the actions and results). When measuring the quality of the test, the student's record is compared operationally with the standard.

The unit on the basis of which the quality of student's performance of control activities is judged is the "substantial test operation".

The operation of a test generally means one or more interrelated actions that the learner must apply to the condition of the test in order to resolve it (17). By a substantial test operation, it means one that reflects the specific purpose of the verification procedure, i.e. adequate to the content and level of testing.

A test is a means of objective measurement of the quality of knowledge of students, if it meets a number of requirements: the control procedure must require the student to perform a well-defined activity in order to manifest acquired knowledge in the external plane; the wording of the control tasks should be unambiguously clear to any subject; the control task and the standard should be formulated so that the quality of their implementation can be evaluated by different teachers equally; one control task should be limited to tasks of one activity level. The starting points for the organization of the control procedure based on the use of tests are two patterns of learning theory. The first of them determines the hierarchy of types of activities during training. The second suggests that activities at each level can be performed only with the assimilation of relevant educational information.

The first requirement is related to such quality of the test as its substantial and functional validity (adequacy).

The second requirement for the task is its comprehensibility, it is formulated in such a way that it provides the students with an unambiguous understanding of what activity is required to be performed, what knowledge and to what extent should be used.

The following requirement is aimed at creating the possibility of an equal assessment of the results of the assignment by various teachers.

Several methods are used to determine the values of measurement reliability and the “standard measurement error”. Widespread are: repeated control; time-distributed control; mutual affinity of control tasks; equivalent task forms. Assessment of the measurement reliability by the above methods is based on the assumption that repeated observations can be considered as a measurement of the same value. And it is assumed that the observed behavior of the measurement object by the trainee remains constant. The measurements taking place with the trainees are explained by the influence of external factors that are unsystematic in nature. But in repeated trials conducted after a short period of time, the factor of acquaintance, memory, and exercise is valid, and in the case of a more or less long period between two trials, the variability of the subjects themselves is affected.

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