

- индивидуализация обучения требуется в большей степени, чем для нормально развивающегося ребёнка;
- следует обеспечить особую пространственную и временную организацию образовательной среды;
- необходимо максимальное расширение образовательного пространства – выход за пределы образовательного учреждения.

PROBABILISTIC-STATISTICAL METHOD OF PSYCHOLOGIC-PEDAGOGICAL RESEARCH

Romanov V.P., Sokolova N.A.

The monograph expounds basic principles of non-classical probabilistic-statistical method of psychologic-pedagogical research, which describes probabilistic-statistical model of student behavior in the process of learning, probabilistic-statistical scaling technique and student knowledge estimation procedure; the results of theoretical and experimental investigation of students behavior in the process of learning have been generalized and recommendations for optimizing the structure of higher education system have been made.

It is shown that determinism of human consciousness and thus determinism of human knowledge of the world around is realized through randomness. This is due to the fact that such cognitive processes as sensation, perception, memory, thinking and imagination, which are present in consciousness structure, involve elements of randomness, caused by random nature of mental and physical state of individual in the process of activity and also by psychological, physiological and information noises, which accompany brain activity.

According to probabilistic-statistical model student is identified by distribution function (probability density), which defines probability to find him in a single area of information space of coordinates, velocities and accelerations of various orders. According to probability conservation law a system of differential equations was written down. These equations characterize student behavior in the process of learning and have the form of continuity equations, which link probability density alteration per a time unit in information space of coordinates and kinematic values of different order with divergence of probability density flow. Explicit form of distribution function have been found, it has a form of superposition of two-dimensional waves, spreading out in information space of coordinates and velocities.

Probabilistic-statistical scaling technique is based on use of measurement scale, represented as an ordinal system $\langle A, L_{\psi}, F, G, f, M \rangle$, where A is ordered set of objects (individuals), which have characteristics of interest (empiric system with relations); L_{ψ} is function space (space of distribution functions) with relations; F is operation of homomorphous mapping of A into subsystem L_{ψ} ; G is group of possible alterations; f is operation of mapping of distribution functions from subsystem L_{ψ} onto numeric systems with relations of n -dimensional space M . According to this technique each distribution function is associated with a set of numbers, corresponding to moments of these distribution functions, this simplifies student knowledge estimation procedure. Student knowledge estimation procedure includes the following steps: to find student individual distribution function on the results of examination, such as test; to calculate moments of these distribution functions; to range students by the level of knowledge, comparing moments of different orders of their individual distribution functions.

It is established, that rate of change of expectation (first moment of distribution function) in information space is directly proportional to impact function of teaching staff on student and is inversely proportional to student resistance function, which describes resistance of expectation to change position in space (similar to Aristotle's law in mechanics).

As a result of implementation of probabilistic-statistical method in psychologic-pedagogical research of students learning process an experimental distribution function have been derived for batch of students for each year of education. Dispersion of these distribution functions over time would increase and functions would begin to overlap. Overlapping of distribution functions come into particular prominence for students batches of second and third, third and fourth, fourth and fifth years, moreover, overlapping would increase from year to year, this indicates that heterogeneity by level of knowledge in students collectives would increase. Thus, to improve quality of students education in higher educational institutions it is reasonable to use principle of staged education with branching. This principle is aimed to provide the best conditions for realization of each student's capabilities as well as to condition optimization of structure of higher education system. Based on principal of staged education with branching specific recommendations are provided on optimization of two-level higher education system structure, which is being adopted in Russia in accordance with the Law of the Russian Federation "On Education".

ПЕДАГОГИКА И ПСИХОЛОГИЯ ВЫСШЕЙ ШКОЛЫ

Шарипов Ф.В.

PEDAGOGY AND PSYCHOLOGY OF HIGH SCHOOL

Sharipov F.V.

Одним из элементов реформирования высшей школы в нашей стране является внедрение западной модели высшего образования, предусматривающей подготовку бакалавров и магистров. Выпускники вуза с дипломом магистра, ориентированные на научно-педагогическую деятельность, получают право занимать должности преподавателей в средних профессиональных и высших учебных заведениях. Следовательно, они должны владеть психолого-педагогическими знаниями, необходимыми для преподавательской деятельности.

Психологические знания преподавателя позволяют ему лучше изучать (познавать), понимать самого себя и других людей, прежде всего студентов. Познание психики человека означает выявление и оценка его психологических свойств, состояния, направленности, отношений и особенностей познавательной, эмоциональной и волевой сферы. Психолого-педагогические знания способствуют преподавателю лучше организовать образовательный процесс, выбирать эффективные методы и средства обучения, взаимодействовать со студентами, устанавливать с ними