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PSYCHOLOGICAL FEATURES OF DEVELOPMENT OF MATHEMATICAL ABILITIES IN ADOLESCENCE

Mathematical abilities are an important component of psychogram of the specialist of such professions as "man-sign system". A mathematical thinking, as a component of mathematical abilities, is necessary for everyone, because the ability to perceive a large flow of new information, analyze and use it and still achieve personally meaningful goals is needed for the professional activity. The development of mathematical abilities is particularly urgent for students of faculty of mathematics and physics, because in their future careers, this component of capabilities also determines an academic level of the specialist.

Analysis of the specialized literature shows that a lot of studies concerned with the development of mathematical abilities of pupils (V. A. Krutetsky) or on the development of mathematical abilities in general. The development of these abilities in adolescence continues to be a current problem nowadays. It is also worth noting that adolescence is sensitive for the development of mathematical abilities.

Mathematical abilities are the individual psychological characteristics that lead to a relatively quick, easy and deep mastery of knowledge and skills in mathematics [3].

A special research was conducted to study the features of mathematical abilities in adolescence. The sample totaled 27 first year students of faculty of mathematics and physics. Diagnostic tools were Eysenck test that aims to determine the level of non-verbal intelligence and Amthauer subtest that is aimed at the diagnosis of spatial imagination, spatial generalization, search patterns and solving arithmetic problems [2].

Analyzing the results of research aimed at finding out the level of non-verbal intelligence of students (by H. Eysenck method), it was found that only 11% of students have the insufficient level of intelligence, others (89%) have the level of intelligence within the age norm.

Figuring level of intelligence of students (by R. Amthauer method) demonstrated that students showed the best results in the performance of tasks aimed at finding patterns in numeric series. Results of the performance of tasks aimed at activating of spatial imagination and solving arithmetic problems are quite high. The worst results were in the tasks, aimed at the diagnosis of spatial generalization.

Comparative analysis of the age and sex differences was conducted using statistical procedures Student's t-test. The results of this analysis showed that significant sex differences in various indicators of nonverbal intelligence were not found. However, there was recorded statistically significant age difference in the level of intelligence. In particular, the 17-year-old students showed significantly higher intelligence compared to the 18-20-year-old ($t = 2,69$, when $p < 0,05$). Also, 17-year-old students appeared such that significantly better solve arithmetic problems, compared with 18-20-year-old ($t = 2,54$, when $p < 0,05$). These data may be evidence that early adolescence is more sensitive for intellectual development than late adolescence. Thus appeared expediency of the development of mathematical skills is in early adolescence.

Summing up the results, we can note, that further research directions of this issue should relate to design and verification efficiency methods for the development of mathematical abilities in adolescence.

LITERATURE

1. Гнеденко Б.В. О математических способностях и их развитии // Математика в школе. 1982. - № 1. - С. 31 - 36.
2. Истратова О. Н. Психодиагностика. Коллекция лучших тестов РнД.: Феникс, 2006.
3. Крутецкий В.А. Психология математических способностей школьников. — М.: Просвещение, 1968. — 432 с.