

Staff training for the development of scientific and technical potential by means of knowledge structuring at the stage of professional education

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Abstract: The development of scientific and technical potential depends not only on the financial base of scientific and research institutions and production but also on staff, which training can be performed by means of knowledge structuring and development of capacity for researches and technologies design.

Key words: scientific and technical potential, staff resource, knowledge structuring, modern didactic knowledge instruments.

By scientific and technical potential we mean the whole set of resources (staff, financial and technical, informational, etc.) intended for problems solution of facing the society of scientific and technical problems. This potential is determined mostly by the institutions specializing in holding research-and-development and design projects, their availability of laboratory, test, bench and other equipment, the presence of qualified personnel, scientific and subsidiary staff [2]. The whole world the level of science development and the degree of its technological usage are the main factors of production development, the increase in productivity and the reduction of labour performance, the economic growth, the rearrangement of economic and financial recourses for the solution of social problems.

However, each equipment and production in whole will be inefficient and even useless without smart staff resource which one should provide institutions of professional education. Unfortunately, the quality of professional education in Russia is not so far on the proper level, that is why it cannot provide with the necessary staff in full measure, we mean experts, possessing the ability of scientific and technological creative work. This problem can be solved by the means of knowledge structuring which are being gained by students. The ability to structure the knowledge is marked as a unique educational act which should be possessed both by pupils of comprehensive schools and by students. It is the ability which provides with the creation of system knowledge and the development of logical and research capacity.

The structuring in the broad sense means the transformation process of objects? information, materials, etc. on the base of making logical links for the purpose of quality improvement of these objects or creation of favorable conditions for their development and usage. Knowledge structuring is an ability is aimed at mastering new and transforming earlier gained knowledge by means of bringing into the certain system on the base of making logical links (structural, generic, cause-and-effect and other relations) between the didactic items (theories, laws, notions, etc.) The structuring process is impossible without logical foundations: the usage of logical laws, operation with the notions (identification, division, generalization, restriction) and logical methods (analysis, synthesis, comparison) [1, p. 74]. After learning how to use these abilities in professional sphere, graduates will become experts who will form scientific and technical potential.

To solve the described problem it is necessary to have certain teaching staff in the institutes of higher education who will be able to structure the subject content of academic disciplines and to develop students' ability to structure knowledge. According to the results of the research the level of teachers' possession in the institutions of professional education the ability to structure the subject content, many of them after graduation from technical, economical, law and other institutions become teachers in the same institutions not having pedagogical education. It is the most common reason of a far from being high level of the teaching competence in the sphere of structuring of the subject content: the teachers meet with difficulties in working out programmes, in selecting material for lectures, practical trainings and seminars. To a considerable degree the reasons of these difficulties are hidden in the lack of awareness of the main point of the notion "structure", inability to consider each studied term (in every academic discipline) from the point of view of its structure i.e. as a system being a unity of structural elements. After filling in the gaps with these professional shortages, a teacher will be able to master the formation methods to help students to structure knowledge.

Teachers can master the ability to structure the subject content while they learn the theory and technologies of the Method of dialectical education which allows a

teacher to structure the subject content of each academic discipline and students can master this content successfully and consciously. Modern didactic instruments of knowledge was developed in the theories and technologies of the mentioned method, it is described in thesis researches and conference materials as a unique method of knowledge [1, p. 108]. It is the design of such instruments which provide the creation of qualities necessary for the development of scientific and technical potential.

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