Innovative technology of engineering profile specialists training for agricultural industrial complex

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Abstract: The article describes innovative technologies for training engineering specialists. The main meaning of improving the future specialists’ professional training is that the student not only accumulates knowledge and acquires the necessary skills during this period, but also harmoniously develops all components of professional competence. However, at the same time, they are also two relatively independent processes that have both common and special principles in the future specialist personality development single process.

1. Introduction
The main regularity of the future specialist training is that the most important incentive for a person’s self-development is his personal labor results study, independent decision-making about the means of his own educational and professional activities, diagnosing the reasons for his successes and failures, as well as the progress independent assessment towards achieving the desired result.

Innovative approaches to a higher education completely new content, providing a well-thought-out, scientifically based system of didactic, informational and technological activities help the student to fully express himself at the development appropriate stage.

The concept «motivation» in the psychological and pedagogical sciences denotes the process as the result of which a certain activity acquires a certain personal meaning for an individual, creates the stability of his interest in it, and turns outwardly set the activity goals into the individual internal needs. Needs, transformed into motives, contribute to the formation of motivation various levels for the educational material assimilation in the higher educational establishment environment. There are three such levels [1-5].

2. Materials and methods
The first level of motivation is associated with the fact that the need to master educational material is stimulated by an external social or narrow-minded motive. It determines the external (formal) attitude to learning activities.

The second level of motivation is achieved when the future specialist need "meets" objectively necessary knowledge, skills and abilities, professional positions and developed (adapted) personality traits. This "objectified need" becomes basic and main motive for the educational material assimilation.

The third level of motivation reflects the student's need for effective realization of his creative potential. It is based on the high claims of the future specialist for self-realization in educational and cognitive activity, which is understood as the highest and main priority. The use of creative potential ensures the best satisfaction of the future specialist needs in self-development. At this level of motivation, achievement motivation plays a significant role. It is characterized by the student's desire to perform the job at the high level of quality wherever there is an opportunity to show his personal skills and individual abilities.
Using of computer training aids (CTA) provides for the provision of trainees with clear and adequate information about progress in training, supports their competence and self-confidence, thereby stimulating internal motivation for self-development in educational and professional activities:

- correlation of the acquired knowledge with the individual actual attitude to himself in comparison with ones around him;
- value attitude towards one's own personal qualities, which implies satisfaction with the positive qualities and the need to consolidate them, dissatisfaction with negative or underdeveloped qualities of one's personality and desire to make changes in them;
- regulation of educational and practical actions, the expediency of self-manifestation in it;
- various personal qualities assessment, control and adjustment, forecasting the results of their own educational activities [6-10].

The educational process using CTA is under the control of the student himself: he feels responsibility for his own behavior, explains the reasons for his success not by external factors (ease of the task, luck), but by his own eagerness and diligence. Namely this «failure-lack of effort» scheme, according to the psychologists opinion, is the best for the preservation and development of internal motivation for self-development in educational and professional activities.

3. Results

CTA with the software appropriate quality contributes to the provision of real freedom to students in choosing the level of information assimilation depending on their individual abilities and inclinations. This trend towards learning differentiation and individualization enables a much larger number of students to gain confidence in their own abilities, to match the tasks requirements and complexity with the level of their abilities and capabilities. Communication with a computer does not get boring, since the more students work with it, the more they learn new things. The ability to provide post-unrestricted attention when using CTA is of great value, which is confirmed by the research results. Working with the use of CTA gives the student such a charge of activity, so fascinates him that he already forgets about the time and finishes his work, as a rule, only after repeated reminders from the teacher. This creates a favorable psychological environment and indicates the steady attention of trainees when working with a computer, the ability to issue information taking into account the individual characteristics of users' perception, allows to relieve tension, has a positive influence on their emotional state, forms a positive attitude towards learning and self-development.

CTA can also have a decisive influence on the formation of cognitive interest. In many training programs, the principle of encouraging students to search is implemented, when the computer, in the event of an erroneous decision, gives orienting instructions, thereby directing the students’ actions. The effective training system ultimately provides error correction and allows the problem to be completed. This eliminates one of the most common causes of negative attitudes towards learning, namely failure to achieve results.

Management of the trainees’ cognitive activity is the necessary component of the didactic process. In many modern CTA, cognitive activity indirect control is allowed, when, as an aid to the student, either a heuristic instruction is given, or an auxiliary task is presented.

The indirect control application is due to two circumstances. First, indirect control allows the use of such means of thinking formation as creative types of cognitive activity, independent search for a solution, etc. Secondly, heuristic instructions, due to their generalization, belong to a wider class of teaching influences than specific instructions, which means that the probability, that such an instruction will be given inappropriately, decreases.

The analysis of the used CTA allows to distinguish four managing cognitive activity modes in computer learning:

1) Direct control: the computer presents an educational task to the student, the students can ask questions only related to the given educational task, the nature of the assistance to the student is determined by the computer;
2) Indirect control: the computer does not present an educational task, but poses a problem to the trainees, which they must formulate in the form of an educational task; game situations are allowed when communicating with a computer; as educational tasks are presented for modeling various industrial and social situations that allow many solutions;
3) Dynamic control: the educational task presented by the computer is solved by the student together with the computer; the nature and degree of assistance is determined by both the learner and the computer;
4) Control, in which the computer plays the role of students educational activity means: the student sets the educational task, the nature and type of assistance is also determined by him. In case of difficulties, the student can transfer control to the computer (the latter, in the process of dialogue, clarifies the difficulties facing student and issues the required help).

The main meaning of improving the future specialists’ professional training is that the student not only accumulates knowledge and acquires the necessary skills during this period, but also harmoniously develops all components of professional competence. At the same time, he has an opportunity to directly engage in the process of future professional activity within the information educational environment framework, based on the use of CTA, active teaching methods (business, organizational-activity games, etc.), models of self-development.

4. Conclusion
Thus, a kind of psychological "acceleration of time” is created, due to which the delay in the use of the acquired knowledge is removed and the attitude to the knowledge gained in the classroom fundamentally changes. It is also important that an intrapersonal conflict is overcome here, due to the need to «accumulate» knowledge with delayed utility, many of which often remain unclaimed in the professional labor conditions.

The student's personality self-improvement is associated with all aspects of its activities in the higher educational establishment. It manifests most fully in two interrelated forms: self-cultivation and self-education. Self-cultivation and self-education mutually replenish each other, have a mutual influence on the nature of the student's work on himself. However, at the same time, they are also two relatively independent processes that have both common and special principles in the future specialist personality development single process.

Self-cultivation in its developed form is understood as the student’s organized, active, purposeful activity to systematically form and develop positive and eliminate negative personality traits in accordance with the perceived needs to meet the further professional activity requirements. In the course of self-cultivation, all the personality aspects (beliefs, worldview positions, feelings, will, habits, character traits, other personal qualities, specific results of activity and behavior) become the subject of constant analysis, study and change.

The student’s self-education acts as the purposeful independent work to update and improve existing knowledge, skills and abilities, in order to achieve the desired level of professional competence.

Today, self-education is considered not only as a desirable, but also as an obligatory component in the professional activity of any engineer. Thanks to self-education, the student's personality intellectual sphere expands, analytical thinking develops, and an active process of accumulating professional knowledge is underway. It acts as the most important way of general cultural development and the formation of professionalism.

In the modern conditions of the university’s information educational environment development, the problems associated with the CTA imperfection, computer training programs, technologies for their application and other conditions of today should be noted: the dialogue “man-machine" today remains relatively scarce, primitive, and this narrows the creative activity field and the student’s activity; there is an excessive algorithmization of their mental activity; long-term work at the display leads to negative physiological consequences (the functions of perception, information processing, concentration of attention decrease, visual fatigue increases).

These problems study in the higher educational establishments showed that 58% of students experienced psychological tension in the process of working with computers, which was caused mainly by the following reasons: poor skills of the trainees; lack of time to solve problems; information overload; information underload; monotonous presentation of information, repetition of work movements and other reasons.

Thus, the application of information technologies into the educational process in the higher educational establishment allows to realize the professional training pedagogical goals:

1. The development of the student's personality, i.e. development:
   - constructive, algorithmic thinking;
   - creative thinking;
   - development of communication skills based on the joint projects implementation by the students.
2. Implementation of the social order, due to the modern society informatization, i.e. specialists training by means of pedagogical and information technologies for independent cognitive activity.
3. Intensification of the educational process all levels, i.e.:
• increasing the efficiency and quality of the learning process through the computer learning tools capabilities implementation;
• identification and use of stimuli for enhancing cognitive creative activity;
• deepening interdisciplinary connections by computer teaching aids use in solving applied problems (modeling, databases, etc.).

New approaches to the qualitatively changed content of higher education, providing a well-thought-out, scientifically grounded system of didactic, informational and technological activities help the student to express himself more fully-featured at the appropriate stage of development. Potentially high didactic capabilities of innovative design technology play a significant role here.

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