



Personal development of future engineers: From individual success to professional excellence

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Nowadays Russia goes through modernization of engineering education. One of the most actual tasks of contemporary higher engineering educational institutions is to give up-to-date education in various areas and degrees.

Contemporary engineer is not just a good technologist, but also a professional who understands economical, environmental, social and other problems of society. He or she should have comprehensive knowledge in science and technology, strive to constant professional development, critically search for constructive decisions and be able to work with people. To achieve this task all the necessary qualities must be developed during the engineering studies at the university.

Every engineer in a varying degree deals with equipment, technical objects and processing procedures [1]. Therefore interest and taste for engineering are among success factors in his professional activity. Mechanical aptitude, power of engineering observation, mechanical intelligence and spatial perception are professionally important qualities.

However engineering activity is of creative nature. Real engineer should act independently, creatively and with initiative in every field. Often engineers become team managers, therefore administrative abilities are also of great importance.

Sense of responsibility is also necessary for professional engineers as wise utilization of funds, equipment and manpower often depends on his work, abilities and self-discipline.

At the university future engineers acquire profound knowledge in such engineering disciplines as mathematical analysis in various variations, engineering graphics (or technical drawing), theory of structural performance of materials, materials sciences and a variety of other highly specialized courses depending on specific major.

Without education in humanities, including psychological and pedagogical preparation as well, a specialist cannot appraise importance of innovations and consciously strive for mastering them, and moreover, overcome obstacles on the way to realization of the achieved results [2]. Psychological and pedagogical education is necessary for every professional, every citizen, since the success of the specialist's work is mostly determined by his special skills, and his ability to communicate with people and work communities of various types.

However the present reality shows that only 50 classroom hours in the average are devoted to a specific discipline of social and humanities block. Within this framework it is only possible to present short review of the discipline issues, its fundamental concepts, but this time resource is hardly enough for providing instrumental skills, working in teams, business communication and conflict resolution.

Future engineers are qualified not only for formation and use of new machinery and technology, but also for active influence on personal relations in work groups and society, for being responsible for own and social welfare.

Introduction of a new academic discipline “Success Psychology” into the curriculum of Bachelor and Master training of Engineering Chemistry and Technology Institute as an elective course is determined by modern requirements to a specialist training [3]. General objective of the discipline is formation and development of social-pedagogical and general cultural competence of students.

As a consequence the discipline is aimed at formation of concept of success phenomenon and students’ mastering practical skills on development of communicative and other personality qualities promoting achievement of success in professional activity [4].

Tasks of the discipline:

- to introduce to the students various approaches in research of success as one of the leading vital personality values;
- to present psychological features which have positive and negative effect on personality success;
- to form students’ skills on time management and setting priority of tasks for achievement of the stated aims;
- to teach ways of forecasting, preventing and settlement of business and interpersonal conflicts;
- to show necessity and possibility of use of theoretical knowledge of the course in practical activity of an engineer etc.

Content of “Success Psychology” discipline is aimed at formation of the students’ skills and qualities promoting development of social-psychological and general cultural competence of the students, such as:

- 1) culture of thinking, ability to generalize, analyze, information perception, statement of objective and selection of ways for its achievement;
- 2) ability to express own ideas orally and in writing in a logically correct, argumentative and clear way;
- 3) eagerness for cooperation with colleagues, team work;
- 4) ability to find organizational and managerial decisions in non-standard situations and readiness to be responsible for them;
- 5) strive for self-development, further training and enhancement of skills, elimination of vacancy in own knowledge and life-time education;
- 6) ability to estimate own advantages and disadvantages in critical way, determine ways and select means for development of advantages and elimination of disadvantages;
- 7) awareness of social importance of own future vocation, high motivation for execution of professional activity.

As a result of mastering the discipline the student will:

- 1) Know:
 - the following notions – success, orientation to success, achievement of success, motivation for achievement, carrier, professional success, self-attitude, competition;
 - ways of self-belief work-out;
 - strategies of goal setting;
 - ways of conflict resolution.
- 2) Be able to:
 - analyze interrelation between personal features and professional success, perform own actions with consideration of results of such analysis;
 - use methods of emotion and will self-regulation;

- form the need for achievement and self-affirmation;
 - forecast, prevent and resolve business and personal conflicts.
- 3) Master:
- skills of speaking in public, argumentation, leading discussion;
 - techniques of effective communication;
 - skills of time planning and establishment of tasks priority for achievement of the set goals [4].

“Success Psychology” course is of practically oriented. Scope of the discipline is 36 hours (18 hours – lectures, 18 hours – seminars and practical classes). Every lecture contains many advice and recommendations on solution of the mentioned problems along with theoretical material [5]. Seminars and practical classes include self-control tests, psychological tests, social and psychological games enabling students’ analysis of interrelation between personal qualities and professional success.

The core idea of the new discipline, which is «from personal success to professional one», determined features of compositional structure of work program. Educational material is comprised of two sections:

1. Features of personality denoting his proneness to successful behavior.
2. Psychology of success in professional activity.

The following themes are considered in the first section: value and motivation sphere and orientation of personality, emotion and will self-regulation, self-esteem, success in the theory of achievements motivation.

Value and motivation sphere of personality is one of the most important sections of psychology since values and motivations determine concrete behavior of the person, his behavioral activity aimed at achievement of goals, which are connected to satisfaction of personal and professional needs.

Positive motivation is a necessary condition for success achievement. It is necessary to show interesting sides of either specific disciplines or the future profession in general in the very process of students’ training in the higher education institution. The discipline Psychology of Success will allow formation of such components of motivation sphere of future engineers as:

- inner motivation aimed at the said field of study;
- orientation of students for gaining of professional education first of all, and believe that mastering profession is very important for him at the present time;
- research and development activity of students, which is revealed in the course of study of social and psychological phenomena and social and psychological climate in the collective and impact to them with the aim of formation of optimal conditions for effective mutual activity;
- manifestation of enthusiasm in mastering of own profession, encouragement of others by own ideas, ability to develop reputation of a leader in the group.

On the other side, the stronger is the motive for achievement of a goal important for the person, the larger is the risk of its non-achievement. Success can be partial (the set task is resolved, but the level of previous achievements and the level of social standards is not exceeded) or complete (achievement of goal of advanced complexity, which sufficiently exceeds previous achievements of the person, his possibilities and abilities as well as average

social standards). A.V. Libin distinguishes a series of components of behavioral strategies connected to steady personal features which have impact on success achievement [6]. The researcher refers the following to such components: competitiveness, priority orientation to success (not avoidance of failure), actually high level of claims. It is emphasized that human success is more connected to personal pre-requisites than to situational ones (implying circumstances which complicate or simplify achievement of the set goals). Several grounds (or criteria) can be distinguished for understanding of professional and personal success of a person. Firstly, success can be evaluated as per specific results (gained money, bought things, created masterpieces or made discoveries, as per gained knowledge, bonuses, awards etc.). Secondly, success can be evaluated as per the applied efforts, since one and the same results have different value for different people. Thirdly when evaluating life success it is important to understand what this person had to pay for such achievements. It can appear that one had to pay by own conscience, dignity, welfare of relatives for his success, and the success was achieved due to betrayal, destruction of imminent social relations, meanness. Satisfied desire of achievement of a goal set by the person is a subjective criterion of success. But the person's perception of own success is associated to his system of relations (to himself, to other people, to the world in general).

Research of value orientations the students' personalities as per M. Rokich system is held within practical classes. System of value orientations determines content side of personality orientation and comprises the grounds for its attitude to the surrounding world, to other people, to itself, the basis of world view and core of life activity motivation, basis of life concept and "life philosophy".

Besides at practical classes students are offered to pass the self-esteem test of V.G. Romek with further analysis of factors reducing self-esteem and making program for its improvement; diagnostics of achievement motivation (method of A. Mekhrabian) and diagnostics of motivation for success and avoidance of failure as per method of T. Elers are held.

It is known that if a person has desire and orientation for success the work will be done much better and the result will exceed all expectations. Belief in own abilities enables overcoming of any difficulties. Lack of self-confidence only kills any desire to work and the result will leave much to be desired. Psychology of achievement motivation is determined by attractiveness of success and subjective value. Need for success achievement is considered and observed at the moment when the person is tuned for a specific activity with a positive attitude. The following notions refer to this category:

- success and high efficiency encourages him to further active behavior;
- success inspires him, contributes to desire to work and forces for necessary work;
- he tries to execute a specific set task in a maximally good way;
- he desires to execute this task;
- he strives to improve own success in a maximum way;
- he works on own new idea so that the result could exceed all expectations.

Motivation sphere of personality characterizes the personality only from one side. Besides this sphere there are aspects of emotion, will and intelligence, which are connected to each other and cannot exist separately. That is why sufficient attention is paid within the discipline Psychology of Success to study of issues of emotion and will self-regulation.

Success of professional activity in general, efficiency of employees' mutual work, psychological climate in the collective majorly depend on ability of every member of the collective to regulate own behavior, to restrain own feelings, to control own mood, consider the needs of situation and the surrounding people.

Emotion and will stability can be considered as one of the most important signs of psychological preparedness of the future engineers to their professional activity. This means ability to reserve psychic state which is favorable for successful work in difficult situations. It is important to learn to control own temper in the most complicated life situations in order to become definitely self-confident. The discipline Psychology of Success will help students to master methods of emotional self-control, will self-regulation (self-order, self-critics, self-affirmation, self-suggestion etc.). When studying this theme important role is devoted to motivation of health and healthy way of life.

Professional activity of future engineers majorly depends on ability of correct goal setting, reasonable time planning, ability to resolve and prevent conflicts, ability to build interpersonal relations in the collective.

These issues are studied in the second section of the discipline.

Ability of goal setting is one of the core skills which needs to be developed by a person who desires to achieve success in personal life and professional activity. The law of goal setting is the most important law of life. Ability of goal setting is an art which needs to be studied and advanced continuously. The major constituent part of goal setting is planning of own actions which will lead to the goal. It is simply necessary to make a plan in order to choose the right direction in advance and not to lose courage when getting prepared to act.

Besides it is important to be able to plan your time correctly and efficiently. There is a simple technique for saving time called time management, which is successfully applied around the world. In the course of the discipline Psychology of Success the students are offered to master a series of techniques and methods successful use of which will enable saving time, planning actions and making everything in time.

During practicums the students are suggested to make own plan of life and self-development, to analyze and correct it.

Skills of correct goal setting, planning of actions and fundamentals of time management will allow students' effective planning of own educational activity during the semester, the examinations, internship and pre-graduation practice at the enterprises in the course of studying in the higher education institution, in the course of thesis preparation [7].

Ability to resolve and prevent conflicts in interpersonal relations will be also useful for students even during studying as well as in the further professional activity. The discipline Psychology of Success considers psychological reasons of conflict appearance, peculiarities of behavior and communication in conflict situations, conflict dynamics, conflict types and functions, methods of conflict management. At practical classes the students can detect own leading style of behavior in the conflict situation as per the method of K.N. Thomas and determine efficiency of their use in various situations.

The discipline Psychology of Success is aimed at formation of independent, creative, socially active, competitive personality of the future engineer. With such combination of

features the personality can develop successfully in professional activity, on the employment market due to having sufficient level of motivation for success achievement.

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