

TRAINING MASTERS OF “DESIGN AND TECHNOLOGY OF ELECTRONIC MEANS” FOR SCIENTIFIC AND EDUCATIONAL ACTIVITIES

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Key words and phrases: master training at technical universities; research and teaching competence; scientific and educational training of master students.

Abstract: The paper discusses the development of teaching skills of undergraduates in the field of design and technology of electronic means. We propose an option for the effective organization of a teacher training course for Master students of technical university.

The problem of training a new generation of engineering, scientific and pedagogical staff able to sustain the dynamics and competitiveness of the economy can be successfully solved only by a new type of a teacher. Such a teacher must possess a high level of competence in the subject area, methodology and design culture, have experience of research and innovation activities, be able to creatively implement innovative educational technology, have the moral principles and beliefs, have professional communication skills, effectively apply information technology, and have the desire to constantly improve their professional level.

Based on the analysis and synthesis of authors [1 – 3], authoritative in the matters of teacher training for higher technical education, the following requirements for a teacher of higher school have been formulated:

- high professional competence, providing deep knowledge and erudition in the scientific domain, non-standard creative thinking, knowledge innovation strategy and tactics, methods of creative problem solving;
- pedagogical competence, including knowledge of the basics of pedagogy and psychology, medical and biological aspects of intellectual activity, modern forms, methods, tools and educational technology;

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- social and economic competence, providing knowledge of global processes of civilization and the functioning of modern society, as well as the foundations of sociology, economics, management and law;
- communicative competence, including the development of literary and written language, foreign language skills, modern technology, effective techniques and methods of interpersonal communication;
- high professional and general culture, which implies the scientific thinking, a stable system of spiritual, cultural, moral and other values in their national and universal understanding.

For technical universities the problem of training teaching staff, corresponding to modern requirements, is topical today, because neither classical universities, nor teacher training institutions prepare teachers of general and specialized subjects. At the same time, high requirements for the professional competence of a new generation of the teachers and changed social and economic conditions have extended and complicated the range of problems that the system of technical teacher training faces.

With the introduction of multi-level system of higher education, technical universities received an opportunity to prepare teaching staff for themselves. In accordance with the new concept of education, Master students should be prepared for effective research and teaching in various fields. In the view of these factors, the effective organization of teacher training of Master students at technical university to perform professional pedagogical functions contributes to the solution of these problems.

The objectives of the research and teaching activity of Master students in Design and technology of electronic means, as declared by the Federal State Educational Standards of Higher Education of the third generation include:

- the ability to conduct laboratory and practical training for students;
- the ability to lead term projects and final qualification works of Bachelor students;
- preparedness to develop teaching materials for students for certain types of training.

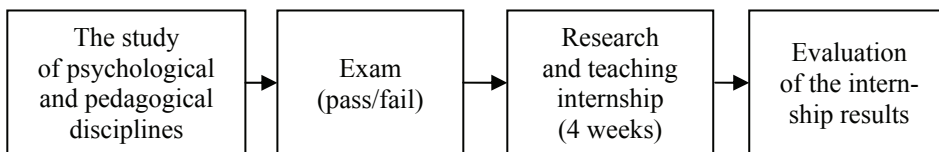
State educational standards for Master program “Design and technology of electronic means” do not provide mandatory study of psychological and pedagogical disciplines [2], and in some cases, training of Master students to work as a teacher of technical disciplines is reduced to scientific and pedagogical internship stipulated in the standards for of all Master programs.

In [4, p. 178] several approaches to research and teaching activity of Master of Engineering and Technology are considered (Fig. 1).

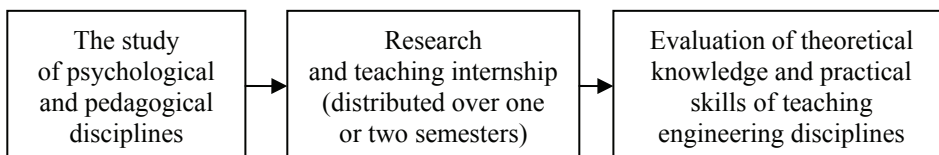
We believe that the implementation of in-depth psychological and pedagogical training of Master students at technical university affects not only the formation of all the indicators of readiness for pedagogical activity, but it is also a necessary condition for the formation of pedagogical research and teaching competencies of Master students at technical university.

The model of the organization of teacher training for Master’s program “Design and technology of electronic means” is shown in Fig. 2.

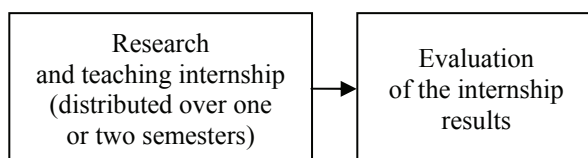
I approach



II approach



III approach



IV approach

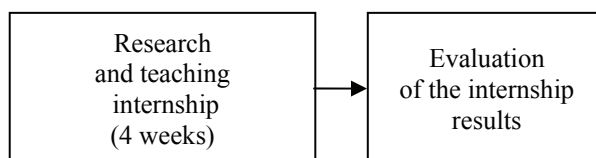


Fig. 1. Different approaches to the organization of research and teaching internship of Master students

We believe that the organization of scientific and pedagogical training of Masters at technical universities requires a systematic approach and special organization of the learning process:

- focus on strategy development, in accordance with the staff policy aimed at creating an innovative system for training teachers;
- orientation of teacher training towards the functional model of pedagogical activity of technical university lecturer and creation of the foundations of readiness for research and teaching activities;
- organization of teacher training as a professional context of the pedagogical activity of technical university lecturer on the basis of formulating and solving professional pedagogical problems that correspond to specific engineering university;
- activities of Master students in the process of teacher training should be understood as teaching and research, be of systematic and continuous nature in the structure of an integrated Master training and regarded as the first stage of teacher adaptation in the structure of continuing education of technical university.

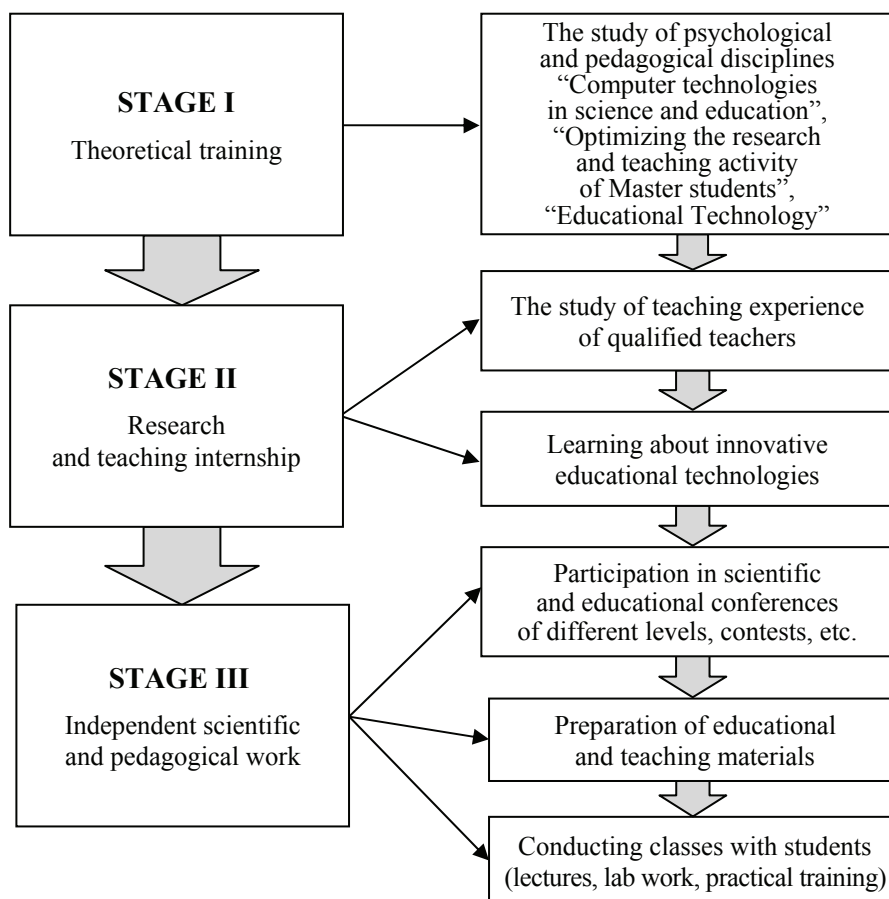


Fig. 2. The organization of teacher training for master's program "Design and technology of electronic means"

Thus, the formation of scientific and pedagogical competencies for Master program in Design and Technology of Electronic Means is realized in the course of professionally oriented scientific and pedagogical training, which comprises theoretical and practical training and includes modules of specialized (research subject), and psychological, educational, social and humanitarian nature.

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Подготовка магистрантов направления «Конструирование и технология электронных средств» к научно-педагогической деятельности

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Ключевые слова и фразы: научно-педагогические компетенции; подготовка магистрантов в техническом вузе; научно-педагогическая подготовка магистров.

Аннотация: Рассмотрено формирование научно-педагогических компетенций магистрантов в области конструирования и технологии электронных средств. Предложен один из вариантов эффективной организации педагогической подготовки магистрантов технического вуза к выполнению профессионально-педагогических функций.

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