

“PREPARING ENGINEERING STUDENTS FOR DESIGN- CONSTRUCTION ACTIVITY THROUGH TEACHING "MACHINE DETAILS"”

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Annotation. In the article, the theory, practice and production lessons are integrally connected to the design and construction activities of engineering students by teaching the science of "Machine details" and the factors to be taken into account in the observation and analysis of such lessons.

Keywords. Detail, engineer, project, design, machine, joint, transmission, shaft, axle, bearing, coupling, spring.

In the preparation of engineering students for design and construction activities, the structure of modern machines, the effective use of the latest advances in science and technology in their design, will be covered by teaching the science of "Machine details". Every designer, every engineer should know the structure and use of machine parts, how to correctly calculate their durability, integrity, heat and corrosion resistance.

When designing modern machines, their details should be as light as possible, strong enough, resistant to friction, simple in shape, convenient and safe to use, and also meet the requirements of state standards. In addition, parts should be quickly and easily replaced with new ones when they fail.

By teaching the science of "Machine details", preparing engineering students for design and construction activities, the structure, connections, mechanical transmissions, shafts and axles, bearings, couplings, springs, as well as directions for calculating and designing them for strength, specialized knowledge and skills and skills formation tasks are promoted.

In the teaching of the subject of "machine detailing", theoretical, practical and production lessons are integrated, ensuring the interrelationship of general education and general professional subjects, as well as mental and physical work.

Observation and analysis of such lessons shall include the following:

- new structure of the lesson and teaching methods;
- interrelationship of general education, general professional, special educational subjects;
- specific principles of professional education;
- professional orientation, interdisciplinarity;
- coherence and continuity.

Such an observation plan is also important in the development of general requirements for modern lessons.

By teaching the science of "machine details", various aspects and components of the lessons are determined in the preparation of engineering students for design and construction activities, including:

1. activities of teachers and students;
2. step-by-step structure of the lesson;
3. content of the lesson;
4. implementation of specific goals;
5. level of use of technical means of teaching;
6. independent work of the learners has been launched;
7. such as the use of student activation factors.

Which one to choose from the lesson observation and analysis plan depends on the purpose of attending the lesson, the level of professional training of the observer, and the form of organization of observation.

The goals of participation in classes can be as follows:

- identification and generalization of advanced pedagogical experiences;
- monitoring the quality and effectiveness of teaching;
- popularization of advanced pedagogical practices.

The form of participation in the class as a group or individually is also important. Before attending the lesson, it is advisable for the teacher to familiarize himself with the calendar topic plan, lesson plan and work plan. Recording information about the progress of the lesson is the basis for its objective evaluation. After the analyzed lesson, the teacher's achievements and shortcomings are discussed. When discussing the result of the lesson, first of all, the word is given to the teacher who passed the training. He gives a brief summary of how he achieved his goal from the lesson. After that, those who participated in the lesson express their opinions by giving evidence as much as possible. They show the advantages and disadvantages of the completed training, and suggest ways to eliminate the disadvantages. When analyzing any lesson, first of all, it is necessary not to forget to take into account the

uniqueness of the educational material, the characteristics of the students and the teacher. At the end of the discussion, a brief summary will be made that expresses the meaningfulness of the lesson, the achievement of the intended goal, and the existing achievements and shortcomings. After that, the analysts draw up documents about the observation and analysis plan.

The plan for the analysis of theoretical training will be as follows:

1. City (village);
2. Educational institution;
3. Course;
4. Group;
5. Specialty;
6. Academic subject;
7. Teacher;
8. Date;
9. Observer's F.I.Sh. and position;
10. The subject of the training (lesson) and its sequence number;
11. Type of lesson;
12. View of the lesson;
13. Organization of the lesson:

Readiness of material and technical support of the lesson:

- demonstration manuals;
- natural samples;
- clips from movies and slide films;
- electronic educational resources;
- working models, tools, layouts, simulators;
- handouts;
- sources of information, schemes, tables;
- the workplaces of teachers and students are equipped;

Preparation of the teacher for the lesson:

- availability of the lesson plan and text;
- knowledge of software material;
- the use of intersubject communication;
- knowledge of specific characteristics of the specific field of production;
- compliance with the rules of safety equipment;
- knowledge of individual characteristics of students;
- ability to use technical means of teaching;

Student preparation:

- attendance, appearance, availability of notebooks and other educational subjects;
- knowledge of the content of the previously passed materials;
- students' interest (mood) in mastering the material in this lesson.

Reasonable organization of the lesson:

- starting the lesson exactly on time, using technical means of teaching, instructional materials wisely;
- compliance of the lesson plan with the content and structure of the studied subject;
- reasonableness of the pace of the lesson by stages;
- ratio of teacher and student activities;

Activities of the teacher:

- that the tasks of the lesson are correctly and clearly presented to the students;
- how well the studied material corresponds to the curriculum;
- ensuring that the studied material corresponds to the state educational standard;
- formation of new knowledge and methods of work based on general education, general professional and special knowledge;

- formation of technical and technological skills;
- the form of organization of educational activities in the lesson (in general, group, individual);
- organization of research activities of students;
- formation of cognitive activity of students;
- implementation of educational principles (intersubjectivity, professional orientation, polytechnicism, coherence, comprehensibility, etc.);

- methods used relatively often in teaching; that is, the organization of exercises to strengthen the learned material, improve knowledge and skills;

- use methods of arousing students' interest in the studied subject, subject and acquired specialization;
- control and evaluation of students' knowledge and skills;
- organization of assistance in this regard to students who have not mastered the previous trainings;

- giving an understanding of the task given at home.

Educational activities of students:

- conscious attitude to what is being taught in class;
- correct performance of labor operations;
- ability to use measuring and testing equipment;
- reasonable organization of one's workplace and work;
- compliance with technical and technological requirements;
- ability to use references and special literature;
- able to perform the given work within the standard time;
- striving to achieve high results in educational work;
- striving to save materials, energy, time, etc.;
- careful attitude to one's workplace, equipment and tools;
- to show labor initiative.

Overall evaluation of the lesson:

- assimilation of new material by students (comprehension, consistency);
- level of formation of general professional skills;
- the degree of achievement of the intended purpose of the lesson;
- general conclusion.

Feedback and recommendations for further improvement of training.

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