

Methodology of Using "Network Planning" Technology in Teaching Technical Creativity and Design

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Abstract:

The article explains the methodology of translation based on a differentiated approach to teaching the subject "Technical Creativity and Design," as well as training using innovative technologies, the "Network Planning" technology, the "Brainstorming" method, and "Heuristic" methods.

Keywords: Construction, technology, differentiated, innovative, design, competence, approach, information and communication.

In today's world, education stands as a crucial factor in driving economic development and innovation. Training students, particularly in the textile and clothing industry, is essential for cultivating skilled professionals who can adeptly navigate a constantly evolving market. A current method to enhance the effectiveness of professional training is a differentiated approach that considers the unique characteristics and needs of each student.

The differentiated approach in education is a method that addresses the individual characteristics of students: their abilities, interests, and educational needs. Utilizing this approach in preparing students studying in the "Technological Education" field for their professions allows for a more flexible and effective learning process. It is important to emphasize that special attention should be given to the differences in students' levels of preparedness, their motivation, and their professional orientations.

In a dynamic and competitive labor market, it is important to focus on each student's individual strengths. This highlights the necessity of developing educational programs that provide opportunities to implement skills and knowledge across various areas of the subject "Technical Creativity and Design," ranging from the fundamentals of design to modern methods of garment construction and modeling.

In this article, we developed a methodology for conducting classes using innovative technologies to enhance students' professional preparedness in the subject of "Technical Creativity and Design" based on a differentiated approach.

Subject name: "Technical Creativity and Design"

Lesson topic: "Teaching the technology of constructing various collars."

Duration of the lesson - 80 minutes

Objectives of the lesson:

Educational: To develop practical skills in preparing various collar samples for women's clothing among future technology teachers.

Moral: To instill respect for labor protection rules during the process of preparing various collar samples for women's clothing, as well as to foster respect for one another and to cultivate national and universal cultural values among future technology teachers.

Developmental: To spark interest in the subject, broaden their worldview, and enhance their ability to work freely, creatively, and independently.

Form of organizing educational activities: Working in homogeneous groups based on a layered approach.

Teaching conditions: Equipped classroom

Teaching technology and methods: "Network Planning" technology, "Brainstorming" method, "Heuristic" method.

Teaching aids: Educational manuals, textbooks, computer, video projector, slides, handouts, TV/KT graphic organizer.

Handout materials: Tests, technological maps, slides, instructions, handout materials.

Course Outline

II. Organizational Part. (7 minutes)

Greeting, checking student attendance, reviewing the condition of the workplaces and the equipped classroom's sanitation and hygiene, and introducing them to the lesson plan.

Plan:

1. Characteristics of designing folded return collars
2. Characteristics of designing straight collars
3. Characteristics of designing fantasy collars

To enhance student engagement in the lesson, they will be asked stimulating questions related to the topic covered.

1. How many stages are involved in preparing pockets?
2. How important is it to determine the placement of pockets in clothing design?

3. Describe the preparation of the side seam.
4. How is the assembly of a patch pocket carried out?
5. What types of pockets are there?

Students' responses will be listened to, and while increasing their engagement in the lesson, information about the new topic will be provided, and students will prepare to complete the assigned task in the practical session. Students will be provided with guidance and recommendations from the instructor, as well as necessary didactic materials and instructional maps for completing the practical tasks.

Main Part: (35 minutes)

The instructor will explain to the students, through information and communication technologies and programs, various types of collars for women's clothing, the sequence of constructive assembly, and the technological map, detailing the sequence of tasks to be performed.

During the process of studying this topic, students should acquire the following practical skills:

- To have information about types of collars;
- To have information about constructing a stand-up collar;
- To have information about constructing a half-stand collar;
- To have information about constructing a straight collar;
- To have information about constructing a flat-laying collar;
- To have information about constructing a unified collar;
- To have information about constructing a unified stand-up collar;
- To have information about constructing a unified raised half-collar;
- To have information about modeling decorative elements in clothing;

The theoretical and practical knowledge that students will develop during the study of the subject includes the following:

- Technology for constructing collar types;
- Technology for constructing a stand-up collar;
- Technology for constructing a half-stand collar;
- Technology for constructing a straight collar;
- Technology for constructing a flat-laying collar;
- Technology for constructing a unified collar;
- Technology for constructing a unified stand-up collar;
- Technology for constructing a unified raised half-collar;
- Technology for modeling decorative elements in clothing;

The teacher provides the students with the main information related to the topic and discusses group work. The teacher explains the overall content of the lesson and the procedure for conducting it. During the lesson, the teacher assigns the task of constructing collar types based on a constructive sequence using "Network Planning" technology.

and G with straight lines (figure 1.3). Use the curved part of the ruler to smooth the lines of the stand at points D and E (figure 1.4).

Shape the edge of the stand at the center front (figure 1.4). I am going to use a bigger curve here and use my free hand to shape it. You can curve more or less. Draw the shape that you want for the finished stand.

How to draft a collar

To draft the collar, I am going to need its length. I would usually make the collar $\frac{3}{8}$ of an inch or one cm shorter than the top side of the stand. Mark that point on the stand and then square down to transfer to the AB line. Mark point H. The length of A to H would be the length of the collar. Start drafting the collar by applying the A to H measurement and mark it A to B (figure 3.1). Then, we need to apply the height of the collar plus 1 inch or 2.5 cm (figure 3.2). The standard for the collar is 2 inches or 5 cm. You can make it higher or lower depending on your design preferences. I want a 2'' wide collar, so I measure 3'' straight from point A and mark point C. Then, do the same from point B and mark point D. Connect points C and D to form a rectangle we need to apply the height of the collar plus 1 inch or 2.5 cms (figure 3.2).

Measure 1'' up from point A and mark point E (figure 3.2). The other 2'' are going to be the center back fold of the collar.

To further shape the collar, extend 1'' from point D (figure 3.3). Connect with point B (figure 4.4).

I am going to use the curved part of my ruler to connect points E and B (figure 4.4). Use a part of the curve that makes a smooth and natural curve.

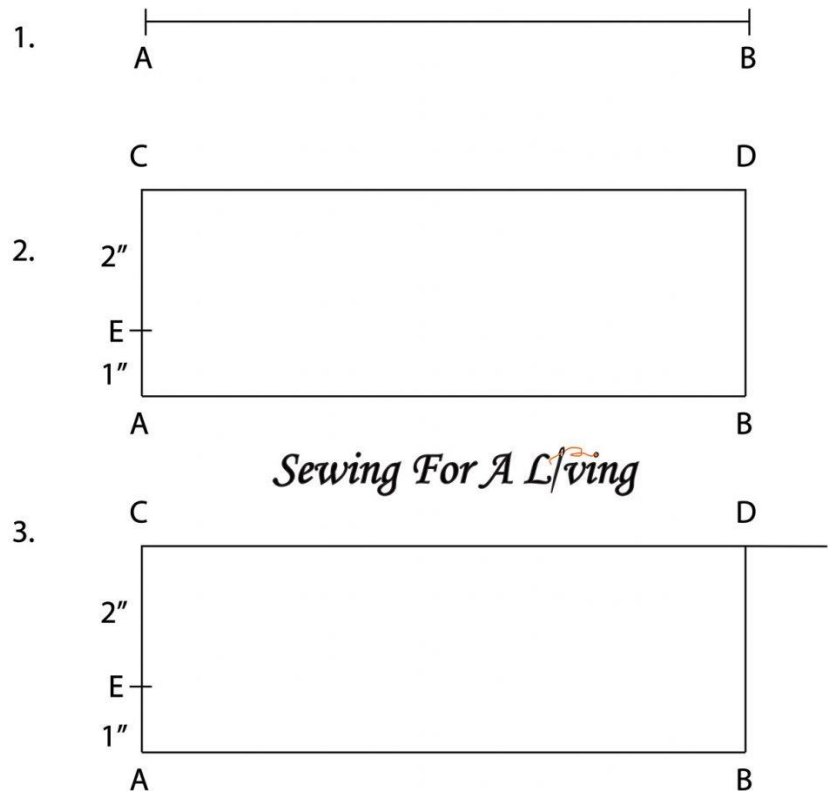


FIGURE 3

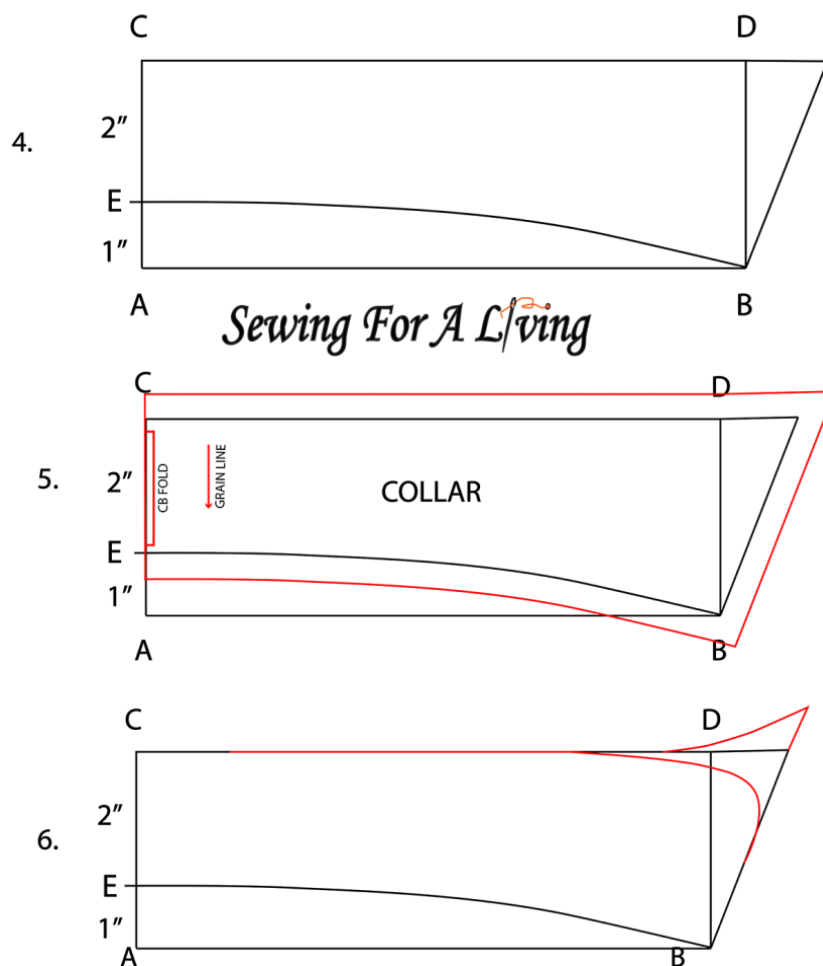


FIGURE 4

Mark the CB fold and the grainline, which is parallel to the CB (figure 4.5). I am adding $\frac{3}{8}$ of an inch or 1 cm seam allowance all around except at the centerfold (figure 4.5).

And that is the shape of a basic collar. If you prefer a different design, you can shape the collar further. For example, make a pointier angle at the front, as shown in figure 4.6. Or, if you want a different design, you can curve the ends (figure 4.6).

Using the technology of "Network Planning," the competency for developing students' professional training is based on a layered approach.

The "Network Planning" technology is aimed not only at independent learning but also at acquiring the necessary personal abilities and skills for mastering a specialty, fostering creativity related to sewing during the task completion process. Students work together to plan and execute the assigned tasks independently, whether in groups, pairs, or individually, and collaborate in drawing conclusions.

The learning process is conducted using creative assignments based on "Network Planning" technology. With the help of "Network Planning" technology, students complete individual assignments on "Preparing various sleeve samples for women's clothing." Future technology teachers are given creative tasks based on the knowledge and skills they acquire on the new topic.

Network Planning Technology

Network planning is a comprehensive methodological approach to education that enhances project planning in terms of timely and logical sequencing, as well as project management and control through graphical representation of individual cycles within a complex project.

Didactic Objective. The didactic objective of network planning is to improve self-organization competence.

Methodological Objective. The methodological objective of network planning is to effectively (well-defined, economical, continuous) plan and implement projects, as well as to monitor overall success.

Synonym. A tool or auxiliary means for project management.

Variants: expanded network diagram, segmented network diagram, intermediate goal-setting plan, standard network diagram, alternative network diagram, network diagram for multiple projects, systematic network planning.

Analogous Methods: task completion deadlines control list, operational plan, technological process cards, structogram, column diagram (Gantt chart), linear diagram (time and path indicator diagram).

Key Features and Fundamentals. Network planning is one of the tools for more effective planning, management, and control of complex projects with intricate structures. However, this method can also be applied to the preparation and monitoring of small project tasks. Thus, network planning encompasses all types of projects. Operational and calendar planning are the main components of this method. A network diagram/plan visually represents the individual components of a project along with their timing and logical sequence.

Origin. The network planning method was developed by French planning specialists within the scope of large projects. By this time, there was a belief that all the challenges of project management could be addressed through a single network planning method. The primary goal was to determine the minimal duration of the project and the probabilistic variants of its process sequences.

Areas of Application. Currently, the network planning method is used for complex or large projects, such as any type of construction projects, machinery and industrial equipment manufacturing, assembly work, as well as in advertising campaigns and scientific research. The network planning method serves as a foundation for project management software.

Conditions. The network planning method can be applied throughout the entire duration of the project, that is, until its completion. It provides continuous feedback by comparing the planned and actual states. The implementation of the method requires structural and time analysis, while subsequent approaches also include cost analysis and production volume analysis. Conducting various analytical tasks is essential for creating the network diagram.

Stages of Integration. The implementation of this project involves answering the following questions regarding all processes (work, activities, action processes) that need to be carried out in their chronological and logical sequence:

What processes (work, activities, action processes) need to be conducted and accounted for?

How are the processes interconnected (previous, subsequent)?

Which processes are carried out in parallel?

How long do individual processes last?

What resources will be needed (material, financial, human)?

What critical deadlines need to be established?

Are there critical processes, meaning processes without time reserves or buffer time available?

As a result of these considerations, a list of completed tasks can be compiled in table form. Students in the group will be divided into three homogeneous groups, and each group will be assigned the task of designing collar types. Homogeneous grouping is the division of students into groups based on common characteristics such as ability level, age, or gender. The advantage of this approach is that it may be easier to manage a group of students at the same level. Teaching a group of students working on the same material can also be more effective, as the instructor can tailor their guidance specifically to that content.

Final part: (10 minutes)

During the session, the students' accumulated scores will be announced, and the winning students will be rewarded. The assessment criteria serve as indicators of the extent to which educational objectives have been achieved, expressed through numbers ("5", "4", "3", "2"). The achievements and shortcomings of the completed tasks will be analyzed, the reasons for the mistakes identified, and ways to address them explained. An assignment will be given for homework.

Organizing the lesson based on this technology and innovative methods allows students in the subject area to develop their independent learning and creative abilities, enhances cognitive development, and fosters skills such as independent planning, execution, and assessment of tasks. The educational material is thoroughly and comprehensively mastered.

This methodology clearly shows that by utilizing several logical sequences of innovative methods in teaching the subjects of "Technical Creativity and Design," the following outcomes are achieved:

- Students' activity in the session increases;
- Their creative approach to independent work develops;
- It provides a good opportunity to master practical skills;
- Teamwork skills develop creatively;
- Cognitive interests are enhanced;
- All students are engaged in the session during individual work;
- The foundation of students' activities is organized around independent work actions.

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