Shevel Boris Oleksandrovych, Candidate of Pedagogical Sciences, Associate Professor, Associate Professor of the Department of Technological and Vocational Education at Glukhiv National Pedagogical University named after Oleksandr Dovzhenko, Glukhiv, Ukraine, https://orcid.org/0000-0003-3608-7980

Mosin Oleksandr Anatoliiovych, student of the 11-T group, Faculty of Technological and Vocational Education, Glukhiv National Pedagogical University named after O. Dovzhenko, Glukhiv, Ukraine

Illienko Yurii Volodymyrovych, student of the 31a-T group, Faculty of Technological and Vocational Education, Glukhiv National Pedagogical University named after O. Dovzhenko, Glukhiv, Ukraine

Malyshev Yurii Oleksiiovych, student of the 31б-T group, Faculty of Technological and Vocational Education, Glukhiv National Pedagogical University named after O. Dovzhenko, Glukhiv, Ukraine

Bocherova Karina Mykolayivna, student of the 21-T group, Faculty of Technological and Vocational Education, Glukhiv National Pedagogical University named after O. Dovzhenko, Glukhiv, Ukraine

DEVELOPING PRICING SKILLS IN FUTURE TECHNOLOGY TEACHERS DURING THE DESIGN AND MANUFACTURE OF PRODUCTS

Abstract

The article discusses methodological examples for developing economic competence in future technology teachers, which is an essential component of their professional training. As technology and economics are closely intertwined, especially in the context of a rapidly changing job market, future educators must not only possess technological skills but also a deep understanding of the economic processes related to production activities. Studying the basics of pricing

and the economic aspects of production allows future technology teachers to effectively organize the educational process, promote the development of students' competencies in the field of economics, and help students realize the importance of economic knowledge for their professional future.

The article presents methodological examples covering key stages of pricing, such as calculating the cost of production, developing costings for projects, analyzing the competitive environment, and calculating production profitability. Examining each of these aspects allows students not only to acquire theoretical knowledge in economics but also to apply it in practice. Specifically, tasks related to cost calculation, creating costings, and market analysis contribute to the development of analytical, economic, and organizational skills necessary for effectively carrying out professional duties in their future teaching activities.

The methodological examples described in the article offer students an opportunity to deeply study pricing principles during the design and manufacture of products, develop skills in working with economic data, and practically master strategies for managing production costs. Students learn to analyze material and labor costs and consider other factors that may influence the final product price. Mastering these skills helps prepare future technology teachers for real professional activities and enables them to teach their students the knowledge and skills necessary for a successful career.

This article aims to improve methodological approaches to developing economic competence in future technology teachers, which is an important step in training professionally competent educators capable of adapting to the demands of the modern job market and effectively teaching students the basics of production economics.

Keywords: economic competence, pricing, cost calculation, production profitability, competitive environment analysis, future technology teachers.

Problem Statement. Pricing is one of the key components of economic activity, reflecting the relationship between production costs and the market value of a product. Developing pricing skills in future technology teachers is an important aspect of their professional training, as it not only ensures the effective organization of the educational process but also fosters the ability to assess economic indicators, which are crucial for preparing students for real production conditions.

This process becomes particularly relevant in the context of designing and manufacturing products, where the future technology teacher must teach students not only practical skills in product manufacturing but also the ability to properly assess the cost of materials, technological operations, and maintenance of production processes. Developing such skills in students contributes not only to the growth of their economic literacy but also prepares them for professional activities in the real job market, where the ability to properly assess and price products is the foundation of a successful career in any production sector [2].

Analysis of Recent Research and Publications. Recent scientific works on the professional training of future technology teachers emphasize the need to develop competencies, among which economic competence holds an important place. For example, in the research by I. Bezpalko, T. Kolienichenko, and others, the importance of integrating economic education into pedagogical practice is highlighted, where the training of technology teachers should cover not only technical aspects but also economic ones, particularly pricing in the manufacturing of products. Similar research on this topic has been conducted by N. Babich, A. Tarasenko, who stress the importance of including economic competencies in the curricula for future technology teachers.

In the context of project-based learning, as one of the main methods of teaching technology, the development of economic skills is found to be necessary for the practical application of students' knowledge in real production conditions.

According to V. Barshtein, T. Zhuk, and others, the development of pricing skills in future teachers is part of the competence-based approach, which involves not only economic training but also the ability of teachers to pass on knowledge that is relevant to the modern job market.

The regulatory and legal framework governing the preparation of future technology teachers in Ukraine is an important element in the development of pricing skills. In particular, the Law of Ukraine "On Education" (2017) defines the general principles and requirements for the training of teachers, specifying the tasks related to the development of competencies, including the economic component. According to this law, the educational process in educational institutions should aim at developing competencies, including knowledge of economics and technology, particularly pricing in the context of design and manufacturing of products.

Also important are the State Standards of Education and educational programs that define the content and structure of teacher training, including future technology teachers. They provide the foundation for integrating economic knowledge into the educational process. However, these standards still do not contain clear guidelines on the development of pricing skills at the higher education level for technology teachers, indicating the need for further improvement of the regulatory framework in this area.

Presentation of the main material of the study. The formation of economic competence in future technology teachers is an essential component of their professional training, as this competence not only ensures an understanding of the basics of economic processes but also develops the ability to apply this knowledge in pedagogical practice. In modern conditions, where economics and technology are closely intertwined, especially in the context of the rapid development of the job market, future technology teachers must have a deep understanding of not only the technological aspects of product manufacturing but also the economic

processes that influence production and pricing policy. This enables future educators to effectively organize the educational process, in which students will acquire skills that meet the demands of the modern labor market [1].

Student training should include not only economic skills but also the development of economic thinking, which is an integral part of preparing for real activities in the market environment. Since economic processes, particularly pricing, directly affect product manufacturing, future teachers are entrusted with the important mission of passing this knowledge on to students. In order for students to master not only theoretical knowledge but also practical skills in this area, methods that combine theory with practice need to be applied [3].

For this purpose, methodological examples have been developed, which serve as useful tools for forming economic competence in future technology teachers. Each of the examples provided allows students to not only study the basics of pricing but also apply them in practice, developing the necessary skills for future professional activity. These tasks also contribute to the development of critical thinking, the ability to work with real economic data, and the ability to make informed decisions regarding pricing in the process of manufacturing various products.

Calculating the cost of production is one of the key aspects of economic training for future technology teachers. This process enables students to not only learn the theoretical aspects of pricing but also practically apply economic knowledge to assess the cost of products. This task allows students to understand the factors that influence the final product cost and how to correctly organize calculations to ensure the economic efficiency of production.

The process of calculating the cost of production involves several stages, each of which is important for accurately determining the cost. Let us consider them in more detail.

The first stage of the calculation is determining the costs of materials used for manufacturing the product. This can be any type of raw material, depending on the nature of the product, such as wood, metals, paint, lacquer, plastic, or fabric. Students must correctly calculate the amount of material required for making one product, as well as its cost.

Since the cost of materials can fluctuate depending on the supplier and market, students should learn to work with different supply options and choose the most economically favorable conditions. Additionally, it is important to consider the margin for material losses during processing or deviations from standard norms. For example, when working with wood, some material may be lost during sawing or processing, so these losses should be taken into account when calculating costs.

The second stage involves calculating labor costs required to produce one item. To do this, students need to account for the number of hours the worker spends making one product, as well as the worker's salary rate or hourly wage. This will allow for an accurate calculation of the labor cost involved in performing each operation.

An important aspect is correctly determining the time needed to produce the item, as even small inaccuracies in calculations can significantly impact the final cost. Therefore, students should be able to assess the time taken for the production process, considering all stages of work: from material preparation to final processing. Average time norms for various types of work or practical observations during production can be used for this purpose.

The third important stage is calculating the depreciation of tools and equipment used in production. Depreciation is the distribution of the cost of tools and equipment over their service life, which allows for including a portion of the tool cost in the overall production cost. Since tools and equipment are often used

across multiple stages of production, depreciation calculation is necessary for accurately determining costs.

Students should be able to correctly determine the service life of equipment and calculate how much of the depreciation costs apply to each product. Various depreciation methods can be used, such as linear (even distribution of cost over the entire service life) or nonlinear (where depreciation is heavier in the initial years of equipment use). Considering the cost of tools and their service life, students gain valuable experience in calculations that ensure an accurate assessment of production efficiency.

Once students have determined material costs, labor time, and tool depreciation, they proceed to the final calculations—determining the production cost of one product. This allows for an accurate understanding of how much it costs to produce a single item, taking into account all factors: material costs, labor costs, and the use of equipment.

Students should be able to compare the production costs of different types of products and analyze how costs can be reduced without compromising quality. To do this, they need to study opportunities for optimizing processes, such as using cheaper materials, reducing labor costs, or more efficient use of equipment.

The final stage involves preparing a report or presentation of the calculation results, providing students with the opportunity to present the data in a convenient format. They must learn not only how to calculate costs but also how to present them clearly, showing how the product price relates to production costs. This stage is important for developing the ability to present economic results in a clear and accessible manner.

The process of calculating the production cost is a crucial part of students' learning, allowing them to apply economic and technological knowledge in practice. They gain experience in the calculations necessary to determine the cost of products, which is an essential aspect of professional training for future

technology teachers. Mastering these skills will enable students to work effectively in real production environments and help future educators impart economic literacy to their students, which is essential for a successful career in any field.

Developing a cost calculation is one of the key stages in the economic training of future technology teachers, as this process allows them to acquire important skills in planning and organizing production processes. Cost calculation is not only a necessary tool for determining product costs but also an important aspect of managing production resources efficiently. Students are tasked with designing a piece of furniture, such as a chair or table, and developing a cost calculation for its production.

This process consists of several stages that allow students to better understand all costs associated with product manufacturing. In the first stage, students must determine the materials required to manufacture the product. For example, to make a chair, wood, paint, and varnish are needed. They must calculate the exact quantity of each material required to make one product, as well as determine its cost. This allows for an accurate determination of material costs, which is a major component of production costs.

Another important stage is the calculation of labor costs. Students should consider how much time the worker spends manufacturing one product, as well as determine the salary rate for the worker involved in the project. Labor costs are a significant component of expenses, so it is important to accurately estimate the number of hours required for different stages of product manufacturing, from material preparation to assembly.

The third stage of the calculation involves accounting for additional expenses that may arise during the manufacturing process. These may include transportation costs for delivering materials to the production facility or rental costs for the workspace. Additionally, expenses for maintaining equipment and

tools, as well as other associated costs such as energy, water, or utilities, should be considered.

The calculation should include all stages of the production process, from purchasing materials to the final product manufacturing. Students must clearly specify the necessary costs for each stage in producing one product and calculate the total costs for manufacturing a single unit. Upon completing the calculation, they can determine the cost price of the product and compare it with the selling price, which helps to determine the production profitability.

The process of developing cost calculations helps to develop students' analytical skills, as they need to consider many factors that affect manufacturing costs. This task also helps students master budgeting principles, which are essential for effective management of production costs in real-world environments. The ability to correctly compile cost calculations will help future technology teachers teach their students not only technical skills but also the economic aspects of the production process, which is an important component of their professional activities.

Analyzing the competitiveness of products in the market is an important stage in the pricing process, as understanding the competitive environment allows for effective adaptation of pricing strategies and determining the best positioning for the product in the market. This task allows students to not only study how competitive factors influence pricing but also gives them the opportunity to apply economic principles for practical assessment and improvement of the product.

In this task, students are asked to select a specific product, such as furniture, home accessories, or other consumer goods, and conduct a market competitor analysis for this product. The first step is identifying the main competitors offering similar products. Students need to gather data about these competitors, such as their prices, product range, quality, and production conditions. This helps to

understand the price range for similar products, the factors influencing their competitiveness, and the strategies competitors use to succeed in the market.

The next step is evaluating the quality of competitors' products. Students should compare products based on several criteria: price, material quality, craftsmanship, design, functionality, aesthetic characteristics, and more. This helps not only to assess competitiveness but also to understand which aspects of the product are most important to consumers, which can assist in developing their own pricing strategy and product positioning in the market.

Additionally, students need to identify the strengths and weaknesses of competitors' offerings. This may include, for example, competitors' advantages such as low prices or high-quality products, as well as weaknesses such as lack of innovation, use of non-ecological materials, or a limited product range. Such an analysis allows students to understand where their product can occupy a favorable niche, improve its market position, and ensure its competitiveness.

One of the key stages of the task is to determine which features can be added to their own product to increase its competitiveness. This might involve improving the design, using innovative or eco-friendly materials, expanding the product's functionality, or providing better after-sales support. Students should consider various ways to improve their own product, which will not only increase quality but also impact pricing by adding value and making the product more attractive to consumers.

This task is highly significant for students as it helps them understand the importance of market analysis for successful pricing. The ability to conduct a competitive environment analysis is essential for developing a pricing strategy that matches real market conditions and for creating products that can compete with existing goods in terms of both price and quality. Additionally, this task contributes to the development of strategic thinking in students, allowing them to

learn how to consider economic factors and adapt their projects to real market conditions.

The calculation of production profitability is one of the key elements of economic competence, which allows not only assessing the effectiveness of manufacturing a specific product but also understanding which factors influence the profitability of the business in the context of constant market changes. In this task, students are given the opportunity to apply theoretical knowledge to real economic situations by calculating the profitability of producing a certain product and evaluating the potential profitability it can generate.

The primary goal of this task is to teach students how to properly account for all production costs in order to determine the sales price that will achieve the desired profit level, as well as how changes in cost or prices can affect profitability. This allows students to master financial analysis principles and strategic management of production costs, which are crucial in real production environments.

The process of calculating profitability involves several key stages. First, students must calculate the cost price of manufacturing a product. This means accounting for all material costs, labor time, equipment depreciation, transportation costs, and other possible expenses required for manufacturing a single product. The cost price is the foundation for determining how much it costs to manufacture the product, and thus, how much at a minimum needs to be earned from sales to cover these costs.

Second, students must consider the sales price of the product. This is important because comparing the sales price with the cost price allows students to determine the level of profitability.

It is important that students not only perform these calculations but also correctly interpret them, assessing what level of profitability is sufficient for production to be profitable. They must also learn how to adapt these calculations

to changes in material or labor costs, as well as consider seasonality of demand or other external factors.

As a result of this task, students not only master profitability calculations but also learn to approach cost management and pricing strategically, which are essential skills for their future teaching careers. This task allows students to combine economic knowledge with practical skills in real production, an important component of their professional training.

One important stage in preparing future technology teachers is creating projects that allow students to independently apply pricing knowledge in practice. This process gives students the opportunity to not only master the theoretical basics of pricing but also learn how to effectively use this knowledge to develop tasks and projects for middle school students. Specifically, the task of preparing a pricing project allows students to apply their knowledge in practice by creating materials that help students calculate the cost of producing simple products, such as handmade items or small furniture.

The project preparation process includes several important stages. First, students must select the type of product on which students can learn pricing principles. These can be simple products that can be made in class, such as decorative items, handmade products, or small furniture that students can create during the educational process. Students must determine which aspects of pricing will be most useful for students, considering their level of knowledge and skills.

The next step is preparing educational materials for students. Students must create appropriate instructions and guides that clearly explain how to calculate the cost of producing an item, including the elements of material costs, labor, and equipment depreciation. It is important that these materials be accessible to middle school students and consider their level of knowledge. Students must also prepare example tasks that will allow students to practically apply the theoretical pricing knowledge they have gained.

Additionally, students need to develop tasks for students' independent work. These can be various exercises that allow students to independently calculate production costs, determine cost price and sales price, and assess how changes in these indicators can impact production profitability. Such tasks promote the development of practical skills in children, helping them understand the importance of the correct approach to pricing and fostering economic thinking.

A special focus is placed on preparing instructions for students that will help them not only calculate cost price but also determine the sales price correctly. This task requires students to create clear and understandable instructions that will help students understand how to use the calculations to determine prices for the products they manufacture. Students should teach students how to find the optimal balance between cost price and sales price to achieve the desired profitability and remain competitive in the market.

This project gives students the opportunity to not only apply theoretical pricing knowledge in practice but also prepare methodological materials that will be used in their future teaching activities. Developing tasks and instructions for students helps students better understand how to ensure effective student learning in real production conditions, as well as enabling them to develop the skills needed to understand the basics of pricing and production economics.

Conclusions. Thus, preparing a pricing project is an important part of training future technology teachers, as it allows students not only to apply theoretical knowledge but also to develop pedagogical skills that enable them to foster economic thinking in students.

Tasks related to calculating the cost of production, developing cost calculations for projects, analyzing the competitive environment, and calculating profitability contribute to the development of key skills such as analytical thinking, economic literacy, and the ability to organize production processes.

These tasks allow students to practically master pricing and budgeting methods, which are essential in today's rapidly changing job market.

Mastering these skills not only enhances the economic competence of future technology teachers but also prepares them for effective management of the educational process, particularly in teaching students the economic aspects of technological activities. Using these methodological examples allows students to understand the importance of pricing, economic assessment, and product competitiveness, which forms the foundation for developing entrepreneurial skills in schoolchildren.

Since pricing is an important part of production processes, teaching these aspects helps students develop skills that will be useful not only in their future professional lives but also in everyday life, where they will be able to correctly assess the value of goods and services, helping them make informed economic decisions.

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