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Aspects of Educating Future Specialists in the Food Industry Amid Changing Social Realities

Specyfika szkolenia przyszłych specjalistów przemysłu spożywczego w zmieniającej się rzeczywistości społecznej

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ABSTRACT

The article examines the peculiarities of training future specialists in the food industry by introducing project technology into the educational process. Emphasis is placed on the development of students' skills such as communication, creativity, cooperation, critical thinking and time management, which will help them to effectively adapt in a changing social reality. Professional training should promote the development of these skills through projects, group assignments, training and other active forms of learning.

The categorization of projects is outlined, highlighting the significance of their practical focus, in particular, the increasing prominence of international trade and cultural interchange necessitates that future specialists possess a comprehensive understanding of global trends and cultural diversity. Furthermore, it emphasizes the need for adaptability to industry changes, underscoring the importance of training competent personnel within a dynamic social context. Consideration is given to the prospect of examining the correlation between social trends and the food industry, aiming to identify strategies for aligning the industry with evolving societal needs.

The implementation of project-based approaches in the professional training of future specialists in the food industry is justified, highlighting the following design methods: the idea matrix method, role-playing method, analogy method, association method, brainstorming method, synectics method, and modeling method. These methods are characterized and practical recommendations for their effective utilization within research projects are provided.

Keywords: project activity; project technologies; professional education; food technologies; research project; project stages

INTRODUCTION

Human functioning within a dynamic social reality encompasses a multitude of facets, given that society undergoes constant changes and transformations. Individuals continually encounter diverse social roles, expectations, and norms. This ever-evolving landscape extends to various sectors of the economy, including the food industry, such as implementation of new legislative norms, changes in consumer demands, and advancements in technological innovation.

Therefore, it becomes necessary to prioritize the training of future specialists in the food industry, equipping them with a comprehensive understanding of the cultural, economic, and social impacts of globalization on the food system, as well as develop the ability to adapt to evolving global trends. According to Nychkalo (2014, p. 4) "it is crucial to recognize that as individuals adapt to changes in their professional activities, their education should transform into an ongoing process of personal growth. This entails the continuous development of knowledge and skills, as well as fostering a readiness to understand and embrace change and to make informed decisions regarding their future actions".

The primary focus of educational institutions lies in offering alternative pathways for acquiring knowledge and skills, as well as facilitating the exploration and realization of students' creative potential through engagement in project-based activities. Therefore, among the pedagogical methodologies widely employed in the learning process, and have a prominent focus on pragmatic outcomes that arise during the resolution of various problems the project-based learning technology emerges as a significant approach in this regard. Project-based learning offers several advantages such as: provides students with the opportunity to acquire additional knowledge beyond traditional classroom content, enables students to cultivate essential skills and abilities that are applicable to solving real-world professional challenges, encourages students to think outside the box, encourages exploration of different perspectives, and prompts students to generate original ideas in a constantly evolving world.

REQUIREMENTS FOR THE USE OF PROJECT TECHNOLOGY

The utilization of the project method presents significant prospects in addressing the training needs of future specialists in the food industry. This method fosters the development of essential project skills, including problem identification, hypothesis formulation, activity algorithm construction, analysis and synthesis of findings, as well as cognitive skills among students. During the development and implementation of a project, students engage in a range of activities that encompass orientational research, cognitive exploration, educational pursuits, practical work, and creative endeavors. These activities are intertwined with the

analysis and synthesis of key properties of material products, the identification of relationships among their internal and external components, experimentation with them, and the exploration of potential solutions to technological challenges and problem situations.

Researchers including Yehorova highlight several key requirements for the effective use of project-based learning technology. These requirements encompass: significance of the problem or task; independent (individual, pair, group) activity; structuring the substantive part of the project; development of the ability to use research skills, namely: outlining the problem and relevant research tasks (brainstorming, round table discussions, etc.); proposing hypotheses; discussing research methods; presenting research results (through speeches, presentations, etc.), and drawing valid and supported conclusions (Yehorova, 2021).

In the process of performing project tasks, students acquire a range of skills. Holoborodko and Hniedashev (2005) highlight both intellectual and practical aspects, including: understanding the essence of the outlined task; implementation of the design algorithm; making corrections to previously adopted decisions; constructive discussion of results and problems at each stage; making necessary calculations; expressing thoughts and solutions effectively; independent search and retrieval of information; evaluation of achieved results; understanding project evaluation criteria and their defense.

This enables the accomplishment of several important didactic tasks, including: effective application of interdisciplinary connections in the process of educating future specialists in the food technology, enhanced relationship between theory and practice in educational process, increased student activity and engagement as subjects of the educational process, strengthened role of self-learning and self-development, purposeful formation of personal qualities such as organization, independence, activity, communicativeness, cooperation, and creativity. These qualities are vital for success in the food industry and are aligned with the key competencies and outcomes assessed during monitoring activities and final certifications of graduates from higher education institutions.

Based on various parameters, different types of projects are identified in the pedagogical literature (Sikora et al., 2022). These types include: purpose and nature of dominant activity (research projects, creative projects, game-based projects, informational projects, and practical-oriented projects); degree of interdisciplinary connections (mono-subject projects, interdisciplinary projects and extracurricular projects); nature of project coordination (direct coordination and hidden coordination); nature of partnership interactions (collective projects and competitive projects); duration (short-term projects, medium-term projects and long-term projects); number of participants (individual projects, pair projects and group projects); nature of contacts (domestic projects and international projects).

Teachers play a crucial role in proposing project topics that align with the educational context and subject matter. These topics can be influenced by the teachers' expertise, professional interests, and the specific needs of future specialists in the food industry. Additionally, students can actively participate in the topic selection process by proposing project ideas that reflect their own interests and passions.

PROJECT TECHNOLOGY IMPLEMENTATION METHODOLOGY

In the project method, the independent work of students is emphasized. However, the role of the teacher is vital in ensuring the success of this method.

To address educational tasks, the first step is to develop a perspective plan for the educational process. The goal of prospective planning is to create a coherent and logical system for studying the educational material within the program and its specific topics. The planning process begins by thoroughly examining the current program and understanding its content and objectives. Once the program is understood, methodological recommendations for working with project tasks can be developed. These recommendations can be created either directly before the class or as a separate stage within the project (Artiushyna et al., 2014).

The teacher needs to determine the main stages of work on the project, necessary materials, a list of equipment and materials, select literary sources, methodological recommendations for students on work at various stages of the project – all this in a narrow sense means a package of educational and methodological materials. It is important to highlight at which stages the work can take place in the classroom, closely related to the educational material, and at which stages independent search and data processing is required, i.e., extracurricular activities of students (Nesterov & Herliand, 2012).

When developing an educational project plan, it is imperative to consider the inclusion of a comprehensive system of parameters that encompass the designed object as a whole, reflecting its integrity. Furthermore, the plan should encompass a system of parameters that constitute its subsystems, including blocks, elements, and their interconnectedness.

The requirements for a project should be taken into consideration, including: 1) limitation (in terms of time, goals, tasks etc.) This allows for effective monitoring of its progress, involving a well-defined plan and schedule for individual stages and the overall implementation; 2) integrity – the project's content should be cohesive and aligned with the overarching idea and expected outcome. Each part should contribute to the overall coherence of the project; 3) consistency and logic – the project should demonstrate a logical structure, where elements are interconnected and complement each other through cause-and-effect relationships; 4) objectivity and reasonableness – the project's idea and problem-solving approach should be

supported by evidence and rationale, indicating that they are the result of planned work and understanding of the situation by project participants; 5) competence – project participants should possess knowledge and understanding of the project's topic, as well as the means and methods for solving the problem. They should be proficient in research methods and project implementation; 6) viability – the project should consider future development prospects and the feasibility of implementation under different conditions; 7) clarity and brevity – the project description should be short and concise, providing a clear understanding of the problem or task and its proposed solution; 8) the project's written form should be engaging and accessible.

In the context of professional education, it is recommended to employ projects that align with the dominant activity of students, such as research projects that share similarities with scientific research in terms of structure. Among the various directions for selecting topics for such projects, exploring cultural and historical traditions of different communities can be particularly fruitful. This may involve investigating recipes for ceremonial national dishes, examining recipes and techniques used to prepare traditional dishes in diverse regions of the country, or exploring the influence of seasonality on people's dietary habits.

Additionally, when selecting a topic, consideration can be given to modern trends in global cuisine and other related areas. It is crucial that the topic formulation incorporates terms such as *dependence*, *influence*, *meaning, analysis* etc. This approach helps to highlight the research problem, which often arises from the emergence of new facts that challenge established theoretical assumptions, thus leading to a controversial situation.

Hence it is crucial to follow the structure of a research project, which includes three essential elements: research planning, the actual research process (involving observation, testing, practical work, and other relevant activities), analysis and conclusion.

At the next stage, the teacher assists students in selecting appropriate methods and techniques to employ in their project. These methods can be categorized as theoretical (empirical) and practical. The methodology encompasses a collection of techniques, procedures, and operations that guide the execution of the project tasks. Within the realm of design methods, it is worth highlighting several notable approaches, including the idea matrix method, the role-playing method, the analogy method, the association method, the brainstorming method, the synectics method, and the modeling method (Artiushyna et al., 2014).

The idea matrix method involves the compilation of various solution options based on multiple independent variables. Typically, the complexity and priority of assigned tasks, the required implementation timeline, and the availability of material, labor, and financial resources play crucial roles in project development. By considering and calculating the options derived from

these variables, it becomes possible to determine the most effective approach for implementing the project.

For instance, students can employ the idea matrix method by creating a matrix that includes various components of food products (such as ingredients, taste qualities, and nutritional values) on one axis, and different idea variants on the other axis. This approach enables them to explore and generate new combinations, leading to the development of innovative food products. Moreover, students can construct a matrix that incorporates different social trends (such as healthy eating, vegetarianism, and environmental consciousness) on one axis, and options for influencing the food industry on the other axis. By systematically considering the intersections of these variables, students can explore unconventional and creative possibilities, fostering their critical thinking and problem-solving skills.

The application of the idea matrix method in the training of future specialists in the food industry holds significant potential for various purposes. It enables the identification of optimal solutions in food product production, thereby enhancing efficiency, productivity, and quality within the industry; contributes to the optimization of production processes in the food industry; facilitates the development of innovative concepts and projects in the food industry. Furthermore, the idea matrix method equips students with valuable skills to solve complex problems in the food industry. By challenging students to consider the interplay of various variables and their potential impacts, this method enhances their analytical and decision-making abilities.

The role-playing method is a valuable approach in the design process, as it enables students to gain a comprehensive understanding of the tasks and challenges they may encounter in their professional practice. This method actively engages students in perceiving and reproducing real-life situations, allowing them to delve into practical scenarios relevant to the food industry.

Students can be assigned real project tasks that simulate the challenges faced by professionals in the food industry. These tasks provide students with valuable hands-on experience and allow them to apply their knowledge and skills in a practical setting such as developing a new food product, planning a restaurant business, organizing food at a large event or implementing food safety standards. Through such project assignments that simulate real scenarios in the food industry, students have the opportunity to enhance their develop planning, management, creative and teamwork skills.

Indeed, the role-playing method in project-based learning activates the learning process and creates a dynamic and engaging environment for students. By assuming different roles and immersing themselves in realistic scenarios, students are actively involved in problem-solving, decision-making, and critical thinking. This method allows them to experience firsthand the challenges, complexities, and dynamics of the food industry.

The analogy method is based on the identification of resemblances among diverse objects, processes, or phenomena, which serves as a foundation for comprehending novel situations and addressing challenges. Taking into account the accumulated knowledge, approaches are being developed that allow to seriously modify design objects. The analogy method enables students to transfer their preexisting knowledge from various contexts (e.g., other industries or situations) to the field of the food industry. This allows them to discern similarities between disparate systems, processes, or concepts, and leverage this understanding to analyze and effectively resolve food industry-related problems.

The association method is employed when the aim is to imbue an object with new attributes or qualities. The essence of this method lies in transferring the characteristics of randomly selected objects to the object being created or enhanced. The method is executed following a specific sequence: random object selection, description of essential features, identification of possible properties, idea generation for design task, development of preferred ideas, selection of final ideas.

The association method allows future professionals in the food industry to establish connections between various elements such as products, ingredients, cooking methods, food cultures, and food technology. This process facilitates a holistic comprehension of the industry. Moreover, this method fosters the development of students' creative thinking abilities. By seeking unexpected associations and connections within the food industry, students are encouraged to generate novel ideas, concepts, and innovations. This approach proves beneficial in the development of new recipes, products, cooking methods, and restaurant concepts that align with contemporary trends and consumer preferences.

The brainstorming method serves as a platform for idea generation, fostering an environment of equal participation, competition, and comparison. This method involves interactive communication where various projects are discussed, facts are examined, and opinions are exchanged. Brainstorming encourages innovation and nurtures the capacity to develop novel products, concepts, and technologies.

The synectics method involves the separate examination of several proposed ideas, followed by the establishment of relationships and interdependencies among them. Through this method, students develop the ability to identify commonalities across different situations or products, which stimulates the generation of new ideas and problem-solving approaches. Furthermore, students learn to draw parallels from other industries or domains that can be applied to the food industry. By leveraging best practices from diverse fields, they can effectively address challenges and drive innovations within the food industry.

The modeling method focuses on the examination of models rather than the actual research object. In the context of the food industry, students learn to construct models that represent various processes, such as product production, supply chains, and distribution networks. This method encompasses the modeling

of new product development, the optimization of manufacturing processes, and the management of product quality, among other aspects related to food technology. By engaging in modeling activities, students gain a deeper understanding of the intricacies and interdependencies within the food system.

The simulation method provides students with the opportunity to explore the economic dimensions of the food industry, including aspects such as profitability, production costs, pricing, and more. Through this method, students acquire the skills to develop economic models that facilitate the prediction of how different factors can influence financial indicators within the food industry and to make informed economic decisions based on the insights gained from these models.

The modeling method in strategic planning enables students to develop models that facilitate the analysis of the food industry market. Through this method, students gain valuable insights into market dynamics, enabling them to make informed decisions regarding product positioning, market segmentation, and food business growth.

By incorporating the modeling method into the education of future specialists in the food industry, students are equipped with the tools to tackle complex challenges prevalent in the field. Through the utilization of models, students gain the ability to identify the underlying causes of problems encountered in the food industry. This allows them to develop the necessary skills for effective management, understanding the complexity and interrelationships in the food industry.

The next stage involves the development of techniques for implementing the selected technological method, encompassing the didactic efforts of the teacher to facilitate and guide the educational and cognitive activities of students. This stage is characterized by experimentation, refinement, and the establishment of process characteristics.

Documentation of the project serves as the final stage, culminating in the defense, which can take the form of a report, discussion or presentation.

Upon completion of the project, the teacher conducts a comprehensive analysis of the collaborative work with the participants. This analysis involves evaluating the students' actions, the effectiveness of the methods used, and assessing the level of independence, activity, creativity demonstrated by each student and constructive feedback to the students from the teacher.

Therefore, the project is the result of the independent development of developed skills, acquired skills, application of knowledge obtained during classes, but already at a new, productive, searching level. The project method teaches to independently set goals and find ways to achieve them, and therefore forms responsibility for one's actions.

The project method offers the opportunity for students from diverse locations to engage in collaborative work on virtual projects and tasks. Through various

online platforms and communication tools, students can connect and interact in real time, regardless of their physical distance. This virtual collaboration develops their interpersonal skills, foster a sense of collective responsibility, and promote effective teamwork.

CONCLUSION

In response to the evolving social context, the education of future food industry specialists should emphasize practical orientation. Project-based learning emerges as an effective approach, allowing teachers to create specific practical scenarios and select interdisciplinary educational tasks. The food industry necessitates collaboration among various disciplines such as food science, food design, economics, sociology, and marketing. Therefore, future specialists should possess knowledge and understanding across different areas and be capable of working in multidisciplinary teams.

The effectiveness of the design process relies on the creative potential of the individuals involved and is influenced by the thoroughness of each stage. Research projects hold particular significance as they cultivate students' capacity for observation, hypothesis formulation, comparison of facts, analysis, and drawing conclusions, while fostering independence and initiative. Developing the ability to select appropriate design methods becomes crucial once students have acquired the necessary theoretical foundation to undertake project tasks assigned by the teacher or chosen by themselves to achieve tangible positive outcomes. Integrating academic knowledge with practical skills, nurturing critical thinking, fostering creativity, and cultivating an innovative problem-solving approach are vital components of this process.

These characteristics of educating future professionals in the food industry within a dynamic social context will equip students with the necessary readiness to tackle the ever-emerging challenges and opportunities within this field.

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ABSTRAKT

W artykule podjęto temat specyfiki szkolenia przyszłych specjalistów przemysłu spożywczego poprzez wprowadzenie technologii projektowej do procesu edukacyjnego. Nacisk kładziony jest na rozwój umiejętności studentów, takich jak komunikacja, kreatywność, współpraca, krytyczne myślenie i zarządzanie czasem, które pomogą im skutecznie dostosować się do zmieniającej się rzeczywistości społecznej. Szkolenie powinno ułatwiać rozwój tych umiejętności poprzez projekty, zadania grupowe, treningi i inne aktywne formy edukacji.

Opisano rodzaje projektów i pokazano znaczenie ich praktycznej orientacji, w szczególności wzrost handlu międzynarodowego i wymiany kulturalnej wymaga od przyszłych specjalistów zrozumienia globalnych trendów, różnic kulturowych i dostosowania się do zmian w branży, w oparciu o zadania szkolenia wykwalifikowanego personelu w zmieniającej się rzeczywistości społecznej. Uwzględniono możliwość analizy związku między trendami społecznymi a przemysłem spożywczym oraz znalezienia sposobów dostosowania branży do zmieniających się wymagań społeczeństwa.

Uzasadniono metodologię wprowadzania technologii projektowej w procesie szkolenia zawodowego przyszłych specjalistów przemysłu spożywczego oraz wyróżniono następujące metody projektowania: metodę matrycy pomysłów, metodę wchodzenia w rolę, metodę analogii, metodę skojarzeń, metodę burzy mózgów, metodę synektyki i metodę modelowania. Przedstawiono charakterystykę i praktyczne rekomendacje dotyczące prowadzenia skutecznych działań projektowych w ramach projektów badawczych.

Słowa kluczowe: działania projektowe; technologie projektowe; edukacja zawodowa; technologia żywności i żywienia; projekt badawczy; etapy projektu