

THEORY AND PRACTICE OF TEACHING

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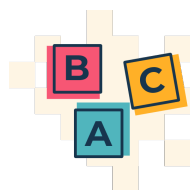
**Innovative authorial approaches to teaching hair extension techniques in
professional education**

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Abstract. *Developing vocational education in hairdressing requires implementing new, scientifically grounded and practically practical approaches to training future specialists. The training of students in the specialty of «Hair Extension Technologies» has become particularly relevant, as it demands precise mastery of innovative techniques and the ability to address specific client needs. The article aims to substantiate the innovative potential of the SensHair and Nanoker methods in vocational education and develop practical approaches for integrating them into the teaching of hair extension techniques. Methods.* The study employed analysis of specialized literature, observation of the educational process, synthesis of practical experience in applying authorial techniques, surveys of educators and students, and elements of pedagogical experimentation within vocational education institutions. **Results.** The SensHair method is an authorial technique of micro-strand hair extension using 3–5 hairs with gentle thermo-fixation, ultra-light microcapsules, and anatomically adapted bonding elements, ensuring safety and visual invisibility. This technique is especially relevant for clients with alopecia or



*sensitive scalp conditions. Nanoker is an innovative non-chemical visual color simulation system that creates a «toned but uncolored» effect by manually mixing 2 to 4 hair shades within a single strand. This approach makes it possible to work with various categories of clients, including pregnant women, individuals with allergies, and those with heightened sensitivity – as well as with different hair types, such as damaged hair or hair with a complex or unstable color base. Integrating these methods into the educational process contributes to the formation of high-level practical competence among students, the development of creative thinking, and adaptability to real industry conditions. **Conclusions.** The SensHair and Nanoker methods are practical tools for updating the content and formats of vocational training in hairdressing. Their implementation in vocational education enables the preparation of competitive specialists capable of addressing complex client requests, including those with medical indications. Pedagogical reflection and structured instructional integration of these approaches lay the foundation for new educational standards in the field.*

Keywords: professional education, SensHair, Nanoker, innovative methods, original techniques, safe attachment, visual coloring, pedagogical technologies.

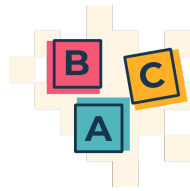
Інноваційні авторські підходи до викладання технік нарощування волосся у професійній освіті

Романюк Марина Вікторівна,

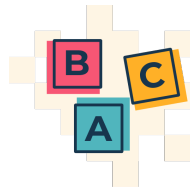
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Анотація. Розвиток професійної освіти у сфері перукарського мистецтва вимагає впровадження нових, науково обґрунтованих та практично ефективних підходів до навчання майбутніх фахівців. Особливої



актуальності набуває підготовка здобувачів освіти за спеціальністю «Технології нарощування волосся», що вимагає високоточного володіння інноваційними техніками та вміння працювати з особливими клієнтськими запитами. **Мета статті** – обґрунтувати інноваційний потенціал методик SensHair і Nanoker у системі професійної освіти, а також розробити ефективні підходи до їх впровадження у викладання технік нарощування волосся. **Методи.** У процесі дослідження використано аналіз фахової літератури, спостереження за навчальним процесом, узагальнення досвіду впровадження авторських технік у практику, анкетування викладачів та здобувачів освіти, а також елементи педагогічного експерименту на базі закладів професійної (професійно-технічної) освіти. **Результати.** Представлено авторську методику SensHair – техніку мікропрядного нарощування 3–5 волосків із щадною термофіксацією, ультралегкими мікрокапсулами та анатомічно адаптованими кріпленнями, що забезпечує безпечність і візуальну непомітність. Методика особливо актуальна для клієнтів з алопецією або чутливою шкірою голови. Техніка Nanoker – це інноваційна система безбарвного візуального колорування, яка забезпечує ефект «тонування без фарбування» шляхом ручного мікшування 2–4 відтінків волосся в одній прядці. Такий підхід дозволяє працювати з різними категоріями клієнтів, зокрема, вагітними, алергіками та людьми з підвищеною чутливістю, а також з різними типами волосся – пошкодженим чи зі складною або нестабільною кольоровою базою. Впровадження зазначених методик у навчальний процес сприяє формуванню високого рівня практичної компетентності здобувачів освіти, розвитку креативного мислення та адаптації до реальних умов індустрії краси. **Висновки.** Авторські методики SensHair і Nanoker становлять ефективний інструмент оновлення змісту і форм професійного навчання у сфері перукарського мистецтва. Їх впровадження у професійну освіту дозволяє підготувати



конкурентоспроможних фахівців, здатних працювати з найвибагливішими запитами клієнтів, зокрема з урахуванням медичних показань.. Педагогічне осмислення та навчально-методичне структурування цих підходів створює передумови для формування нових освітніх стандартів у галузі.

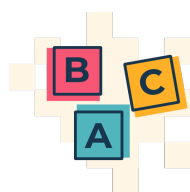
***Ключові слова:** професійна освіта, SensHair, Nanoker, інноваційні методики, авторські техніки, безпечне кріплення, візуальне колорування, педагогічні технології.*

Problem statement. Modern professional education in the beauty industry faces several challenges associated with rapid technological changes, increasing demands for service quality, and the need for an individual approach to each client. This is especially true for the direction of hair extensions, where the technical complexity of the procedures is combined with high aesthetic and psychological responsibility to clients, particularly those with medical reservations, sensitive scalps, or hair loss due to disease.

Traditional teaching methods do not always allow students to form a sufficient level of practical training adapted to the individual needs of clients and the latest technological solutions. Often, the educational process lacks emphasis on new, gentle techniques that exclude chemical effects on hair and consider modern ethical and physiological requirements.

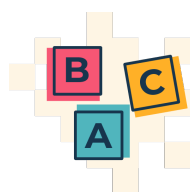
In this regard, there is a need to update the content and professional training methods for future hairdressers. The integration of original, innovative techniques, which not only meet technical standards but also consider the needs of vulnerable categories of clients, contributes to the development of creative thinking, individualization of training and the formation of sustainable practical skills of future specialists.

The SensHair and Nanoker methods, as an example of such original solutions, have not yet received proper educational and pedagogical understanding in the



context of vocational education despite their wide practical application in Ukraine and abroad. That is why scientific research into the possibilities of introducing these technologies into the educational process, taking into account the specifics of training specialists in hairdressing, is relevant.

Analysis of recent research and publications. Analysis of modern research and methodological materials indicates the importance of innovative authorial approaches to teaching hairdressing techniques in vocational education. In particular, S. Tupalenko [1] investigates the history of hairdressing art, which is a fundamental component of the formation of professional competence of future specialists. T. Piatnychuk [2] focuses on developing the professional competence of masters of industrial training, which is key to the high-quality implementation of new techniques and methods in the educational process. N. Pryshchepa and O. Chernivska [3] consider a competency-based approach to training skilled workers, emphasizing the importance of integrating modern methods into practical training. O. Sporshev [4] analyzes innovative methods in industrial training lessons in vocational educational institutions, indicating the need to update pedagogical approaches and use modern technologies in teaching constantly. L. Io. Bratyna [5] offers methodological developments of lessons on innovative hair dyeing methods, demonstrating the practical value of integrating new techniques into the educational process of vocational education institutions. O. Storonska [6] highlights the features of the professional activity of a teacher in the conditions of digital transformation of education, including the use of digital tools to increase the efficiency of learning. O. Bazelyuk [7] investigates the choice and application of digital tools in vocational education, which is relevant to implementing modern technologies in teaching hair extensions. In international studies, considerable attention is paid to studying the influence of the chemical composition of hair dyes of both natural and synthetic origin. F. Anwar, S. Latif, M. Ashraf, and A.H. Gilani [8] analyze modern scientific developments in using natural dyes, particularly their safety, color fastness and



bioactive properties. A. Ali, Moinuddin, S. Allarakha, S. A. Fatima, and S. Habib [9] consider the risks associated with synthetic dyes, which can cause allergic reactions, skin irritation and other negative consequences. Y. Tang, W. He, Y. Wu, and R. Cai [10] evaluate the effectiveness and safety of vegetable dyes, which is essential for developing environmentally friendly technologies in the professional training of specialists.

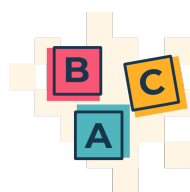
A systematic analysis of scientific sources and methodological materials indicates the relevance of innovative author's approaches in professional education, which integrate traditional and modern technologies, digital tools and environmentally friendly materials in teaching hairdressing techniques. Despite the variety of studies covering related aspects of hair care, there is a need for more targeted developments dedicated directly to hair extension and coloring techniques.

Identification of previously unresolved parts of the overall problem.

Despite the active development of professional education in hairdressing, several important aspects of training specialists in hair extension techniques remain insufficiently studied. In particular, there is a lack of research devoted to implementing the author's techniques focused on working with special categories of clients - people with alopecia, damaged hair, allergies or medical restrictions on the use of chemicals.

Most of the existing training programs focus on general extension technologies, not including modern, gentle techniques with proven effectiveness in the content of the educational process, which already has wide practical approval in the field of beauty. In particular, the SensHair and Nanoker techniques, although they demonstrate high demand among masters and clients, are still not considered objects of systematic pedagogical adaptation in the conditions of professional education.

In addition, there are practically no comprehensive scientific approaches to didactic modeling of the educational process considering these innovative



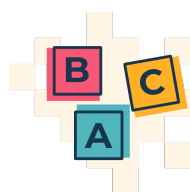
technologies. There are no unified standards for teaching micro-thread extensions with an anatomical approach or imitation colorless coloring, and there are no defined criteria for assessing the professional training of students who master such techniques.

A pressing need is a thorough pedagogical study of the potential of these author's technologies as components of innovative educational content. Within the framework of this work, it is proposed to consider the possibilities of integrating SensHair and Nanoker methods into professional training, which will ensure compliance with modern industry requirements, improve the quality of educational programs, and contribute to the formation of practically trained competitive specialists.

Formulation of the article's goals (task setting) The purpose of the article is a comprehensive study and pedagogical justification of the author's SensHair and Nanoker techniques as an effective tool for the modernization of professional education in the field of hairdressing, as well as the development of methodological approaches to their implementation in the educational process.

To achieve this goal, the following tasks were set:

1. To analyze the current state of teaching hair extension techniques in professional (vocational and technical) education.
2. To characterize the essence, technical features and innovative potential of the SensHair and Nanoker techniques.
3. To determine the pedagogical conditions and didactic possibilities for integrating these techniques into curricula.
4. To test the elements of the techniques in the educational environment and assess their impact on the level of professional training of education seekers.
5. To formulate practical recommendations for teachers on effectively using the author's technologies in the educational process.

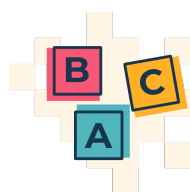


Presentation of the main research material. Hair extension techniques occupy an essential place in the professional training of hairdressing masters, which reflects the growing demand for these services in the beauty industry. However, despite the procedure's popularity among clients, teaching these techniques in the vocational (vocational) education system has several limitations and challenges. In particular, the vast majority of educational programs provide for the study of basic hair extension technologies, such as capsules, tape, glue or cold extensions. These methods are universal but often do not consider the specific needs of clients with sensitive skin or medical contraindications. The traditional approach to training focuses on technical aspects. Still, it does not pay enough attention to innovative and gentle technologies that contribute to maintaining hair and scalp health.

In many cases, modern educational standards and methodological materials do not reflect the rapid changes in the beauty industry. The lack of adaptation of educational programs to innovative techniques, such as SensHair and Nanoker, leads to graduates not always being ready to work with the most modern technologies that meet market requirements and customer expectations.

In addition, the teaching process does not sufficiently use an interdisciplinary approach that includes elements of dermatology, color, and anatomy, which is necessary to fully understand the specifics of working with special categories of clients. Often, there is a lack of modern educational materials, visual aids, and demonstration videos that illustrate the unique author's techniques and ensure the clarity of the educational process.

At the same time, some educational institutions are beginning to experiment with the implementation of authors and authoritative techniques, among which SensHair and Nanoker deserve special attention. These techniques have shown their effectiveness and safety in professional practice, but their pedagogical testing in the educational environment has not yet received systematic development. In addition,



the lack of standardized programs and methodological recommendations hinders the widespread implementation of such innovations.

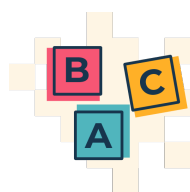
The current state of teaching hair extension techniques in professional education requires significant updating and harmonization with innovative trends in the beauty industry. It is urgent to develop and implement comprehensive training programs that combine theoretical knowledge, practical skills, and modern proprietary technologies, preparing competitive specialists capable of providing high-quality services that consider clients' characteristics.

SensHair and Nanoker techniques are examples of innovative technologies in hair extensions, which radically differ from traditional approaches and open up new perspectives in professional practice and the educational process.

The SensHair technique is based on the microstrand hair extension technique, which involves using ultralight microcapsules with 3–5 hairs in each strand. The main technical features are:

- gentle heat fixation, which minimizes thermal stress on the hair and scalp, which is especially important for clients with increased sensitivity or alopecia;
- microscopic capsules that provide reliable yet barely noticeable fixation that adapts to the individual anatomy of the scalp;
- ultra-low weight of materials, which does not burden natural hair and provides a comfortable, natural look.

The innovation of SensHair lies in the combination of these characteristics, which makes the technology safe, comfortable and as visually natural as possible for the client. Before SensHair appeared on the market, no technique would simultaneously consider the ultra-lightness of materials, the gentle effect of thermal fixation, the microscopic size of capsules and the individualization of fixation [11, p. 442].



The Nanoker technique is an innovative system of colorless visual coloring that simulates the effect of hair coloring without chemical dyes. The main technical features of Nanoker include [12, p. 20]:

- manual mixing of 2–4 hair shades within one strand, which creates a natural, multifaceted color effect;
- individual selection of a mix of shades taking into account skin tone, natural hair base and desired color transition;
- the absence of chemical effects allows the technique to be used for clients with weakened, damaged hair, pregnant women, people with dye allergies, and those with an unstable color base due to previous coloring.

Nanoker's innovative potential lies in creating a unique visual effect that combines the aesthetics of coloring and the safety of hair health. It opens up new opportunities for working with special categories of clients previously deprived of such services due to medical contraindications.

Both methods – SensHair and Nanoker – are examples of a comprehensive approach that combines advanced materials, technologies, and individualization of procedures, allowing the improvement of the quality of services and the significant expansion of the audience of clients. Their implementation in professional education contributes to the formation of a high level of professional competence in future specialists, which meets the modern requirements of the beauty industry.

Integrating innovative methods SensHair and Nanoker into the professional (vocational and technical) education system is possible, provided that an appropriate pedagogical environment is created and adapted didactic strategies are implemented (table 1). These methods require high accuracy of execution, an individual approach to the client and a deep understanding of physiological and aesthetic features. Therefore, their effective teaching requires the implementation of modern pedagogical technologies, interdisciplinary training, and practice-oriented forms of organizing the educational process.

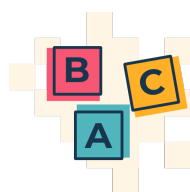


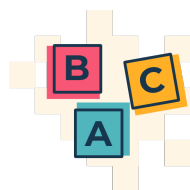
Table 1

Pedagogical conditions and didactic possibilities for integrating SensHair and Nanoker techniques into professional education

<i>Pedagogical conditions</i>	<i>Didactic possibilities</i>
<i>Actualization of the need for innovations in professional training</i>	Increasing the motivation of applicants to master modern, competitive techniques
<i>Interdisciplinary construction of the educational process</i>	Integration of knowledge in biology, chemistry, color, materials science and dermatology
<i>Participation of authors of techniques in the educational process</i>	Conducting demonstrations, master classes, expert sessions
<i>Material and technical support</i>	Creating conditions for practicing techniques in an environment close to real practice
<i>Modular construction of educational programs</i>	Flexible inclusion of new techniques in professional disciplines
<i>Use of case methods and project activities</i>	Formation of an individual approach to clients, development of practical solutions
<i>Formation of ethical and inclusive competence</i>	Preparation for working with clients who have medical or physiological characteristics

Source: author's development

Effective didactic integration of innovative SensHair and Nanoker techniques into the educational process of professional education involves the formation of a holistic set of pedagogical conditions that provide a synthesis of a high level of technological mastery of students with developed flexible skills, professional ethics and the ability to empathize with clients. Implementing appropriate didactic approaches allows the educational process to be brought closer to the real conditions of the modern beauty industry, particularly when working with clients with medical or physiological characteristics. It, in turn, contributes to the formation of competitive, mobile and socially responsible specialists who can adapt to dynamic changes in the labor market and respond to individualized requests in the field of aesthetic services [13]. To determine the effectiveness of implementing the author's



SensHair and Nanoker techniques into the educational process, a pedagogical approbation of individual elements of the techniques was carried out within the professional modules of professional training in the direction of «Hairdressing». The testing was conducted based on two vocational (vocational and technical) education institutions in Kyiv and Lviv during one academic semester. The study involved 64 students and six teachers who had previously been instructed on the specifics of the methods.

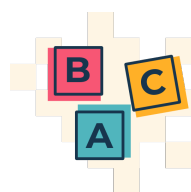
The educational experiment involved the gradual inclusion of the following components: demonstration of the author's techniques in the format of master classes, performance of practical tasks using the SensHair microcapsule attachment and the Nanoker color mix technique, development of individual cases based on client requests, as well as modeling of complex professional situations with elements of hair and scalp condition diagnostics.

The assessment of the level of professional training was carried out according to the following criteria:

- technical accuracy of performing the procedure;
- knowledge of technological processes;
- adaptability to the client's needs;
- creativity in selecting a solution;
- formation of professional and ethical competencies.

As a result of implementing the author's elements of the methods, a significant increase in the average level of professional competence of the experiment participants was recorded. Compared with the control group, which worked using traditional approaches, the experimental group noted:

- an increase in the accuracy of performing procedures by 27.4%;
- increase in the level of validity of coloristic decisions by 32.1%;
- improvement of communication skills with clients by 21.6%;
- Increase the level of general professional motivation by 18.9%.



In addition, qualitative indicators reflect the formation of interdisciplinary thinking experience among participants, flexible responses to individual client requests, and increased interest in the latest hairdressing technologies.

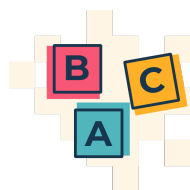
Thus, the testing results confirm the feasibility of integrating the SensHair and Nanoker methods into the professional training system. They not only enrich the content of educational programs but also create conditions for forming a competitive specialist of the new generation [14].

The integration of innovative SensHair and Nanoker methods into the professional education system requires not only technical mastery of procedures but also the development of effective pedagogical strategies. Given the complexity of the methods and the specifics of the target audience, which requires a special approach (cases of medical indications, increased sensitivity, alopecia, etc.), teachers should focus on a multidimensional teaching structure. In this context, several practical recommendations have been formulated that contribute to the effective assimilation of content, the development of professional competence, and the quality of training of future specialists (table 2).

Table 2

Practical recommendations for the implementation of the author's SensHair and Nanoker methods into the educational process

<i>Pedagogical strategy</i>	Expected effect
<i>Conducting trainings and master classes with the participation of authors of methods or certified experts</i>	Ensuring the reliability of the transferred experience, increasing the motivation of education seekers
<i>Modular organization of educational material (SensHair and Nanoker as separate educational blocks)</i>	Promotes structured assimilation of information and allows integration into different levels of complexity
<i>Individualization of educational tasks according to the level of training of applicants</i>	Formation of personalized development trajectories and increasing confidence

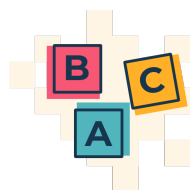


<i>Simulation modeling of situations from real practice</i>	Development of professional thinking, ability to make decisions in non-standard conditions
<i>Application of interactive methods (cases, debates, portfolio)</i>	Increasing involvement in learning, development of critical and reflective thinking
<i>Interdisciplinary approach (combination of knowledge of color, dermatology, and psychology)</i>	Formation of a holistic picture of professional activity and a deeper understanding of client needs
<i>Implementation of digital learning elements (video instructions, simulators)</i>	Optimization of teaching time, support of visual memory, repeatability of actions
<i>Formative assessment with individual feedback</i>	Increasing the level of self-awareness of applicants, development of autonomy and professional reflection

Source: author's development

Applying the above pedagogical strategies allows for significant improvement in the quality of teaching and practical training of students in the hair extension field. In addition to the technical mastery of the author's techniques, students form systemic thinking, have flexibility in responding to atypical requests of clients, and develop emotional competence, which is critically essential in professions focused on working with people [15]. Such approaches meet modern requirements for specialists in the beauty industry and open up new opportunities for updating the content of professional education.

Conclusions. The study demonstrated the significant potential of the author's methods, SensHair and Nanoker, for modernizing professional education in hairdressing. In the process of implementing the goals, it was revealed that the modern system of training specialists in hair extension techniques requires a significant update of the content and teaching methods, in particular by integrating



innovative technologies that take into account the latest trends in the beauty industry and the specifics of individual client requests.

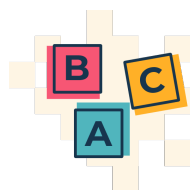
Analysis of the technical characteristics of the SensHair and Nanoker techniques showed that they not only provide a high-quality aesthetic result without harm to the hair but are also adapted to work with special categories of clients - people with medical indications, alopecia, sensitive skin and allergic reactions to dyes. From a pedagogical point of view, these techniques have high educational potential due to the accuracy of execution, interdisciplinary content and the possibility of modular implementation in educational programs.

The determined didactic conditions and developed recommendations allowed the creation of a model to implement innovative techniques in the educational environment effectively. The testing results confirmed that such approaches contribute to developing students' practical skills, critical thinking, creativity, and professional flexibility.

Further research may be aimed at developing digital simulations for practicing skills, assessing the impact of these techniques on the long-term professional adaptation of graduates, and studying the emotional and psychological aspects of interaction with clients in the context of using innovative technologies in hairdressing.

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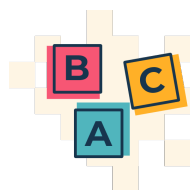
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