Combination of Empirical and Theoretical Knowledge
as a Problem of Piano Pedagogy of Ukraine

Abstract. Professional training of specialists in the field of musical art is an urgent task, as it contributes to the development of a performing and pedagogical culture, which is reflected in the understanding of a musical composition. High-quality music education ensures continuous professional and creative development. The purpose of the study is to determine the basic principles of combining empirical and theoretical knowledge in the educational process for training future musicians and pianists. The main methodological base of the study consists of: methods of theoretical (monographic, abstraction, and concretisation) and empirical (analysis, content analysis, generalisation of pedagogical experience, experiment) search. The study considers the main principles and trends in the development of modern piano pedagogy in Ukraine. The essence of the concepts of empirical and theoretical cognition in the context of the educational process is analysed and the features of their possible application in piano pedagogy are identified. An educational process model for training future pianists is proposed, which would allow providing favourable conditions for the development of a creative personality, better performing skills, and an independent professional performer. It is established that the specific features of piano pedagogy condition the need to adapt modern educational methods to the conditions of the educational process in the context of obtaining music education. As a result, during the application of the model for organising the teaching of piano art, which provides for the unity of theoretical and empirical cognition, the principles on which such a model should be based were identified. The practical value of the study lies in the fact that the development of a model for combining methods of theoretical and empirical cognition in the educational process of piano art students is proposed.

Keywords: professional training of pianists, future musicians, musical education, models of the educational process, creative development

INTRODUCTION

Professional education of musicians is a unique process, closely connected with the traditions in Ukrainian music education and the specific features of existing classic creative schools which are open for innovation. The fundamental difference between the training of musicians and the training of specialists in other fields of knowledge is the orientation of the entire training process to the development of the artistic personality of the graduate, considering the degree of one’s giftedness. Such an ambitious goal does not allow unifying methodological approaches to training specialists in creative fields. The task of the teacher is not only to select teaching methods and principles for each student to transfer their experience and the experience of their teachers but also to understand, adapt, and implement innovative pedagogical technologies.

A musical performer today is an active independent person, whose skill is based not only on reproducing musical material but also on creativity and creative self-fulfilment. Professional education for future pianists should be aimed at developing a personality capable of going beyond the narrow specialisation and ready for independent creative search, growth, and self-development. Considering the
According to the functional purpose of the study, methods of the educational process for training future musicians and pianists. One of the issues of modern pedagogy is the combination of empirical and theoretical cognition. Today, the concept of empirical cognition is being given increased attention, some researchers consider its application to be the only necessary model of the educational process [1], and the question arises whether it would be appropriate to use such a technique in the field of musical piano education, which has a number of specific features. Thus, there is an issue of finding the optimal combination of empirical and theoretical cognition of the methods of piano pedagogy in Ukraine.

The purpose of the study is to develop the basic principles of combining empirical and theoretical knowledge in the educational process for training future musicians and pianists.

MATERIALS AND METHODS
According to the functional purpose of the study, methods of empirical and theoretical levels were used. Based on the sources of accumulation of information material, the methods were divided into the examination of scientific sources and generalisation of individual pedagogical practice. The logic of examining the issue and conducting the study at the first stage was based on determining current trends in the development of music pedagogy; at the second stage, the problems of empirical learning were analysed.

The monographic method was used to collect factual research material, determine the relevance, analyse recent publications, and formulate the purpose of the study. The method of abstraction and concretisation allowed identifying current trends in the development of music pedagogy. It also determined the dynamics of the development of Ukrainian musical and pedagogical thought; natural trends in the development of phenomena in the theory and methodology of teaching music education and piano pedagogy; changes in the training of specialists in the music and educational sphere, the conditions under which the educational process takes place. The principles of conducting empirical training of piano students were determined using the methods of content analysis and theoretical generalisation. The analysis of the results obtained allowed comparing the findings of this study with the results of other Ukrainian and foreign researchers. The pedagogical experiment allowed developing a model for combining methods of theoretical and empirical cognition in the educational process of piano students. The graphical method allowed clearly reflecting the principles of experimental learning. The methodology of musical art is not limited only to the sphere of theoretical cognition but also contains a practical aspect.

RESULTS AND DISCUSSION
Current trends in the development of music pedagogy
Current trends in the development of music pedagogy, in particular, foreign ones are characterised by a radical change in their goals and objectives. If earlier the main functions of a teacher were to teach students performing skills and develop their creative imagination, today the essence of the educational process is increasingly reduced to the teacher’s help in learning. G. Neuhaus's statement about the need for a teacher to become unnecessary for a student as soon as possible by instilling the independence of thinking, the ability to achieve goals, maturity, and self-cognition is known [1].

The problem of change in the usual methods of teaching the student is quite clear. In the process of gaining experience, each teacher develops a system of piano lessons, mostly based on traditions and supported by their own practical activities. Since a high-quality performance of the student on the exam with subsequent participation in a competition or admission to a higher special educational institution is the criterion of the success of pedagogical work in a music school, all the efforts of the teacher are directed to teaching a certain number of compositions to demonstrate the student's skills. Sometimes this training is very expensive for both the teacher and the student. However, this path is clear, methodically developed, and leads to results when working with competent students.
Thus, the main goal of modern musical piano education can be defined as the development of creativity and imagination of the student, musical and performing skills, the ability to understand music, critical thinking, the ability to take creative initiative, and independent thinking. However, some researchers of the foundations of the Ukrainian piano school note that today the practice of teaching is dominated mainly by conservative (reproductive) methods of piano teaching [4]. The importance of imitating the traditions of teaching piano art is undeniable, but the need to adapt music pedagogy to modern conditions of the educational environment cannot be rejected. Modern educational trends increasingly give preference to practical and empirical methods in the educational process.

Pedagogy should foster a love of musical art, artistic taste, and the ability to hear and understand music in the child. All this is greatly facilitated by learning the best examples of piano literature. Folk songs and dances, highly artistic works by Soviet, Ukrainian, and foreign composers are the approximate stages of the modern system of piano education for children. A teacher who is entrusted with the musical education and upbringing of a child should make music lessons interesting and exciting from the very beginning because it most often depends on the first months of classes whether the music will become a friend and joyful companion of a person or whether they will remain indifferent to it. Therefore, the teacher should apply the theoretical knowledge based on which lessons are built. For the organisation of piano pedagogy, it is important to recognise that learning and development are interrelated, but not identical processes. Admittedly, in the process of learning, when a certain amount of knowledge and skills is accumulated, development takes place. Development is identical not only to the expansion of knowledge. With development, the quality of a person’s mental operations changes. The feedback of learning, in turn, based on development processes, is also important. The intellectual qualities of a student considerably affect the learning process. The one whose intellectual potential is higher learns better.

Moreover, the quality of musical thinking is determined not only by the amount of knowledge. It should be remembered that the emotional factor is of great importance in musical thinking. Therewith, music education considerably affects the overall intellectual level of the student, if developmental teaching methods are used during piano lessons. However, not every piano teacher knows how best to guide the student, what the student can do on their own, and what they can do under the teacher’s guidance. The methods of developmental pedagogy when working with gifted children are of particular importance. Admittedly, it is necessary to find original ways of development and training that combine special education with a broad educational offer for such a student. A gifted child can considerably outperform their peers in development, but the improvement of original thinking requires special teaching methods that consider individuality. In the course of theoretical teaching, basic, general pedagogical laws are established and formulated that allow explaining already discovered facts and predicting future events and facts [11]. The importance of the theoretical component of the educational process is conditioned by the study of historical experience, the laying of the foundations of the science of piano art, the basis for the professional education of a musician, and the creation of a scientific basis for the practical application of skills.

However, theoretical knowledge that is not applied in practice loses its power. For example, after theoretical learning of notes, it is necessary to consolidate this knowledge in practice. Note playing should start when the student is fluent enough on the keyboard, has a good command of the staff, picks up sounds and pauses, and has learned the notes of the original treble clef well. This is an important prerequisite for the student to continue playing without looking at the keyboard, musical text, and not their hands. When an adult or a child who has never studied music learns notes, this training is usually combined with the fact that they not only learn how the notes are named, placed, or written, but also try to learn to play right away. This is a difficult task. When teaching notes to a beginner, they should be invited to play them immediately with great attention. In the first classes, great attention should be paid to the oral reading of entries from a sheet with their own names. To do this, the student shows the corresponding note with a pencil and calls it out loud. The use of methods of empirical cognition serves as a strong motivating factor for learning, a tool for the development of stable practical skills of the student and their professional independence. The student must constantly learn independent work, improving the skill of performance, it is possible to become an independent creative person and a professional performer or teacher only this way.

That is why it is important to develop a student’s creative thinking. Creativity develops in situations that require an intellectual search initiative from the student, when the student begins to be interested in finding new areas of creative development, in particular in narrowly oriented activities. Therefore, the teacher should be able to talk about music in a fascinating, imaginative, poetic way and present complex theoretical rules in an accessible, understandable form, considering the level of knowledge, interests of students, individual characteristics and character. It is advisable to use the teacher’s explanation for the development of students’ artistic imagination – this contributes to the necessary expressiveness and accuracy of the rhythmic performance of a piece of music. Thus, considering the concept of development ofperforming culture in learning to play the piano, A. Mikhalyuk notes that its content lies not only in the perfection of performing technique but in musical-aesthetic, professional, creative, spiritual development [3]. V. Bulgakova and O. Tsuranova emphasise the importance of unity of performing and general musical development of students, the need to stimulate the development of creative initiative, independent thinking, considering the unity of principles of conscious and emotional, technical and artistic in educational activities [5].

O. Shcherbinina notes that the determining factor
in piano pedagogy is the individual principle of teaching, that is, ensuring the adaptation of pedagogical methods to the student’s personality. According to the researcher, the individual approach to students, unfortunately, remains mostly only declared, and in the process of piano training, the student most often develops according to the parameters determined in advance by the teacher [4]. The fact that in modern foreign music education more attention is paid to the development of musician’s creativity is emphasised by A. Mok. In particular, he notes that musical skills, knowledge, and concepts are currently only part of the learning process, while other aspects – the creation of music, its critical analysis, and understanding of music in context are coming to the fore [9].

The importance of applying a student-oriented approach is emphasised by many foreign researchers. Thus, K. West and T. Cain note that the curriculum should be adapted to students depending on the level of their previous training. A preliminary test can identify the level of students’ knowledge, which would help develop a lesson plan, avoid presenting material already known to students, and allow focusing on students’ weaknesses [10; 12]. Students of professional music educational institutions who achieve the goals of their training should consciously (but not without consulting a teacher) choose an individually planned educational trajectory, considering their abilities, natural talents, interests, needs, professional prospects, etc.

Thus, the result of proper musical education should be not only the skill of performance but also the establishment of a creative professional capable of independent creative analysis and production of ideas.

**Analysis of the problems of empirical learning**

The main problem of modern music pedagogy in Ukraine is the need to reorient to the training of an educated, creative musician who not only has perfect skills in performing piano works but also has a high level of both musical and general culture. Therefore, when choosing teaching methods, priority should be given to those that ensure the development of creative thinking of the student and the fulfilment of their potential, motivate them to learn, and accumulate individual creative qualities.

It is known by experienced professionals that only a student who has the necessary and sufficient creative freedom in various educational situations, for example, in choosing an interpretive solution, etc. can make intensive progress in personal and professional development. There can be no positive and stable results of teaching creative professions in conditions of bondage; however, the situation of unfreedom in real everyday pedagogical life occurs much more often, regardless of whether this is realised by the participants in the educational process themselves or not [13].

Fundamentally important: freedom of cognitive activity and the rule of creative choice should not only be given to young musicians; they need to be especially encouraged to do so by placing them in conditions where they would be forced to show creative initiative and independence. In recent years, both in foreign and Ukrainian pedagogy, the ideas of using methods of empirical cognition are increasingly spreading. Unlike the conventional approach to learning, which involves more attention to theoretical methods (the presence of a clear and consistent system of presentation of material, exercises, assessment system), empirical learning is based on more flexible principles – the main focus is placed on the process of learning rather than on its the content. Empirical approach (practical) – “new facts are established in science and empirical laws are derived; accumulation, selection, comparison, mental analysis and synthesis, quantitative and qualitative processing of pedagogical facts obtained in the process of practical research.

In the course of empirical learning, conditions are created that provide for the need for the student to take initiative, make decisions, and take responsibility for the results obtained. The empirical learning process allows students to experiment, be creative, and take part intellectually and emotionally.

Therewith, the role of the teacher is to choose the appropriate learning model, set tasks, explain conditions and rules, coordinate the process, monitor it indirectly, and help evaluate the results obtained. The purpose of empirical learning is to allow students to see the level of their own knowledge and skills on their own experience, to draw their own conclusions from the learning result obtained. In other words, empirical learning can be called “learning through experience” or “learning through activity.”

Researchers from different countries examined the problems of empirical learning. For example, D. Kolb [13] proposed a four-step model of the process of learning and assimilation of information. In the experimental model, D. Kolb described two different ways to enrich experience: concrete experience and abstract conceptualisation. He also identified two ways to transform experience: reflexive observation and active experimentation [13]. According to D. Kolb, specific experience provides information that serves as a basis for reflection. From these reflections, students learn information and develop abstract concepts. In other words, learning consists of repetitive stages of “doing” and “thinking.” Therefore, it is impossible to learn anything effectively just by learning theory. Similarly, training in which actions are performed thoughtlessly, without analysing their results, cannot be effective (Fig. 1).
Acquisition of experience
Observation (analysis of experience)
Theoretical generalisation
Application of new knowledge

Figure 1. D. Kolb’s model of experimental learning

Source: compiled by the author based on [13]

The essence of empirical learning is to gain knowledge and develop skills directly through practical experience. In empirical learning, students pass the stage of theoretical learning and begin to learn the subject through solving practical problems. During empirical learning, students learn from their mistakes, solving the problems they face with rather superficial knowledge. Empirical learning is based on the principles of student-centrism, maximum work without the participation and help of a mentor-teacher, the use of various experimental opportunities for learning, the availability of feedback-assessment of the experience that the student receives, in particular, step-by-step control of the learning process. Empirical learning should create the best conditions for developing the student’s skills.

Apologists for empirical learning often rely on the concept of the so-called “learning pyramid”. It was developed in the 1960s by the National Training Laboratories Institute for Applied Behavioral Science (USA), hereinafter referred to as NTL. Thus, different learning models, according to NTL studies, provide different levels of information retention. The concept offers seven basic learning models, graded in a pyramid according to the percentage of information that can be memorised as a result of their use. For example, after listening to a lecture, according to researchers, a person remembers only 5% of the information, after reading – 10%, listening – 20%, presentations/demonstrations – 30%, discussions – 50%, practical implementation – 75%, transmission of information to others/teaching others – 90% [14].

Thus, the “learning pyramid” assumes that some learning methods are more effective than others, and the use of some of them can lead to deeper learning and longer retention of information. However, this concept has been repeatedly criticised. For example, K. Letrud noted that the study is largely based on an unknown methodology of questionable quality, with an unknown reduction in the impact of certain parameters such as time, specificity of the tested groups, etc., which makes the results of the original study unreliable [15]. Indeed, when planning a teaching model, it is necessary to consider that the group will include students who strive for different learning styles: while someone of the psychophysical type is closer to practical participation, the other student needs more time to analyse the information that can be provided through reading the material. It is necessary to include tasks and methods of work that are attractive to all students in the curriculum, which could help them use the strengths of the priority learning model and compensate for existing weaknesses.

The problem that the teacher faces today is not only to give the student special knowledge, which in one way or another would not be enough, since certain professional skills should be expanded, updated, transformed, etc. The problem is how to develop a set of personal and professional qualities and characteristics in a graduate of a music educational institution that would help them adapt to non-standard situations and reach the level necessary for meeting “production” tasks in a fairly wide range and of the right quality. The specificity of piano art lies in the fact that the basis of high-quality education is the development of professional performing skills, which is impossible with the use of empirical teaching methods exclusively. Piano education should be guided by the national and aesthetic values of the piano art of Ukraine because the Ukrainian piano school has a long tradition, both related to executive skills and pedagogical skills.

One of the foundations of high-quality piano education was the development of the critical thinking of the student. The development of the ability to independently analyse and interpret the artistic content of musical compositions can be ensured only under the conditions of appropriate theoretical training. Thus, according to the author’s definition, piano pedagogy in Ukraine should be based on the use of a theoretical and empirical model of the educational process in the form of a gradual transition from the use of theoretical to the predominance of the use of empirical methods of scientific cognition (Table 1).
Table 1. Model of combining methods of theoretical and empirical cognition in the educational process (on the example of teaching piano art)

<table>
<thead>
<tr>
<th>Theoretical cognition</th>
<th>Training models: lectures, presentations, independent work with the material. Example: learning the basic principles of the development of modern musical art, demonstration of the skill of piano performance by a teacher, learning the features of the style of the Ukrainian piano school</th>
<th>Result: development of a theoretical basis, a request for new information, inclinations, and practical activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose: familiarisation with the issue under study, accumulation of problematic issues, identification of contradictions</td>
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<tr>
<td>Theoretical and empirical cognition</td>
<td>Training models: joint practical work with the teacher, seminars, discussions, brainstorming sessions. Example: research activity in the field of musical creativity, analysis of a piece of music, practical classes on executive skills</td>
<td>Result: development of the ability to work independently, potential capabilities, and natural abilities of the pianist</td>
</tr>
<tr>
<td>Purpose: discussion of problematic issues, practical application of the obtained theoretical knowledge with the help of a teacher</td>
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<tr>
<td>Empirical cognition</td>
<td>Learning models: problem-based learning, project method. Example: preparation of a creative performance, creation of a piece of music</td>
<td>Result: acquisition of knowledge through practical experience, creation of a request for new information. Development of a pianist as an independent creative person</td>
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<tr>
<td>Goal: independent implementation of tasks and projects</td>
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Source: compiled by the author

Empirical and theoretical methods of scientific cognition differ in content. The same issue can be examined in both ways, but the approach to this subject and its reflection in scientific results will be different. Empirical research in terms of its goals and research capabilities aims to examine phenomena, identify connections between them in the framework of scientific experiments, and apply other methods of empirical cognition: observation, measurement. With the theoretical method of scientific cognition, the main task of the course is to show substantial connections. In this regard, the essence of the object of the study is revealed theoretically through the laws discovered and formulated by the researcher [16].

Empirical and theoretical methods of scientific cognition differ in the specific features of interaction between the researcher and the object. The empirical approach is based on the direct interaction of the researcher with the object under study. The theoretical approach initially does not provide for such a direct interaction of the subject of cognition with the object. It is studied indirectly, because at this level the researcher works with an ideal, abstract image of the subject, using the results of empirical cognition (which excludes subsequent empirical clarification of such an image). Empirical and theoretical knowledge are closely related. The result of empirical knowledge depends on the previous development of a theory that allows (or does not allow) understanding and interpreting the phenomenon under study. Without a preliminary theory, it is often impossible to say exactly what is being observed. Every scientific experiment is always based on a scientific idea, concept, or hypothesis [17].

It is worth noting that it is impossible to discuss the use of exclusively theoretical methods of cognition at the theoretical stage and only empirical and practical ones at the empirical stage. The above refers to the advantage of certain methods at each stage. A creative independent active personality of a pianist can be developed only under the conditions of implementing an activity-based approach in education along with the principle of unity of theoretical, practical, and empirical teaching methods.

CONCLUSIONS

The study established that piano pedagogy is a specific branch of education that requires updating and adapting modern educational methods to the reception of music education. Theoretical teaching methods are interrelated with practical ones, but during piano training, empirical methods should not be implemented without a theoretical
basis. Piano training cannot be based on empirical methods exclusively, it necessarily requires a theoretical basis – both in the field of developing knowledge of the theory of musical art, technical performance skills and in developing creativity and critical thinking of the student. The application of the model for teaching piano art, which provides for the unity of theoretical and empirical cognition, should be based on the following principles:

– orientation to the national aesthetic values of the Ukrainian art of piano playing;

– integrated use of theoretical and empirical methods of cognition;

– a student-oriented approach;

– focus on developing the potential and natural abilities of a pianist;

– a gradual change of the role of the teacher to the facilitator-mentor, who only coordinates the learning process;

– promotion of maximum student independence;

– increase of student interest in investigation and development of research competencies.

REFERENCES


Анотація. Професійна підготовка спеціалістів у сфері музичного мистецтва є актуальним завданням, оскільки сприяє формуванню виконавської, педагогічної культури, що відображається в розумінні музичного твору. Якісна музична освіта забезпечує постійний професійно-творчий розвиток. Метою дослідження є визначення основних принципів поєднання емпіричного та теоретичного знання під час навчального процесу з підготовки майбутніх музикантів-піаністів. Основну методологічну базу дослідження склали: методи теоретичного (монографічний, абстрагування і конкретизація) та емпіричного (аналіз, контент-аналіз, узагальнення педагогічного досвіду, експеримент) пошуку. У статті розглянуто основні засади та тенденції розвитку сучасної фортепіанної педагогіки України. Проаналізовано сутність понять емпіричного та теоретичного пізнання в контексті навчального процесу, визначено особливості їх можливого застосування у фортепіанній педагогіці. Запропоновано модель навчального процесу з підготовки майбутніх піаністів, яка дозволила створити сприятливі умови для розвитку творчої особистості, формування кращої виконавської майстерності та становлення самостійного професійного виконавця. Визначено, що специфіка фортепіанної педагогіки зумовлює необхідність адаптації сучасних освітніх методик до умов навчального процесу в контексті отримання музичної освіти. Унаслідок цього, під час застосування моделі організації навчального процесу викладання фортепіанного мистецтва, що передбачає єдність теоретичного та емпіричного пізнання, було визначено принципи на яких повинна базуватися така модель. Практична цінність роботи полягає у тому, що запропоновано авторську розробку моделі поєднання методів теоретичного та емпіричного пізнання в навчальному процесі студентів-музикантів фортепіанного мистецтва.