

computer science to social networks. The material of the discipline aims at giving students a tool applicable to both the behavioral sciences (cybernetics, information theory, systems theory, game theory) and set theory, matrix theory, group theory and other disciplines. The main tasks to be solved in the study of the academic discipline «Graph Theory»:

- familiarization of students with the basic concepts and facts of graph theory and the connections between them;
- training in methods of finding key structural and numerical characteristics of graphs;
- familiarization with the methods of constructing and analyzing graph-theoretic models of applied problems.

It should be noted that this academic discipline contributes to the development of discrete mathematical thinking skills and the ability to apply them to specific tasks. For understanding the discipline, a student needs a minimal level of prior mathematical knowledge and skills. In particular, it is necessary to have an understanding of the general theory of mappings, initial information from set theory, and linear algebra. Effective teaching of graph theory requires a combination of traditional and innovative approaches. In lectures, elements of problem-based learning can be used, for example, inviting students to independently solve the classic problem of the seven bridges of Königsberg, which marked the beginning of graph theory. This approach stimulates interest in the subject and develops research skills. However, it should be noted that there are a number of problems that arise when studying this discipline among university students:

- understanding the practical significance. Graph theory is widely used in practical tasks such as the design of telecommunication networks, logistics, robotics, and many others. In particular, Hamiltonian graphs are used to model the traveling salesman problem, which is one of the classic optimization problems.

- visualization problems. Understanding graphs often requires good visual representation, and a lack of visualization skills can be an obstacle. A good solution to this problem is the use of specialized online services, such as Graph Online. This service allows you to visualize the graph and solve a number of practical problems.

**Conclusion.** The study of graph theory contributes to the development of critical thinking and analytical skills, which are key in many fields of activity. The study of this academic discipline contributes to the development and enrichment of the professional competencies of future specialists.

1. Avdeyuk, O. A. General approaches to the formation of methods of teaching graph theory in higher education / O. A. Avdeyuk, A. V. Krokhal'yov, I. V. Prikhodkova. – Text : direct // Young scientist. – 2011. – № 5 (28). – Vol. 2. – P. 115–116.

2. Anishchik, T.A. Investigation of the problems of teaching graph theory and approaches to solving them using nonparametric methods / T.A. Anishchik, L.M. Gilyazova, V.S. Koblyansky, D.R. Korabel'nikov / Scientific Journal KubGAU. – 2022. – №177 (03). – P. 1–18.

## FEATURES OF GROUP PIANO TRAINING IN CHINESE EDUCATIONAL INSTITUTIONS

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Piano collective class is a teaching model that integrates traditional piano teaching, modern science and technology. It is a new type of keyboard learning course developed by combining traditional piano teaching with modern science and technology. Piano group classes have opened up broader space for the popularization of piano education in China, and at the same time, they have a strong driving force for the sustainable development of piano education in China [1; 2]. **The purpose** of this article is to identify methods for group piano teaching.

**Material and methods.** The methodological basis of the study is the work of scientists devoted to teaching piano (Dan Zhaoyi, Dai Baisheng, Meng Shu). Methods of analysis, systematization and practical methods were used.

**Results and its discussion.** Piano teaching includes the enlightenment teaching of children's piano, often conducted in a one-on-one teaching mode. One teacher, one student, can be more precise in cultivating professional skills, but it is not conducive to the large-scale popularization of piano education. In order to make this new teaching form more suitable for piano popularization and basic education at all levels, the author has conducted certain teaching explorations and research on children's piano collective teaching and non-piano professional students' piano collective teaching through years of teaching practice. In terms of teaching children's piano group lessons, corresponding teaching cycles, time lengths, methods, textbooks, and requirements for parents to provide guidance during and after class have been proposed based on the different age, physiological, and psychological conditions of children. In teaching, we adhere to the principles of gradual progress and inspiration. While integrating education with music, we also pay attention to the training of piano basic skills and fingers, in order to lay a solid foundation for students in their basic skills and performance abilities (Figure 1).



Figure 1 – Studying musical notation in piano lessons

In terms of piano collective courses for non-piano major students, the author focuses on cultivating students' basic playing abilities in piano solo and ensemble, mastering and understanding relevant knowledge of the development history of piano art, improving students' grasp of music understanding and expression of works by writers from different periods, and possessing certain piano performance abilities. At the same time, using collective teaching as a platform to expand knowledge points such as music theory, harmony, and musical forms can help them learn other professional courses. This is the greatest value and role of piano collective courses for non-piano major students. Any form of teaching requires continuous self-improvement to achieve sustainable performance. The development of piano collective classes has put forward higher requirements for the teaching ability and comprehensive quality of teachers.

Due to the special nature of the curriculum and the influence of the teaching environment and teaching status, digital pianos are used as learning instruments in piano group lessons, which is different from the traditional piano playing experience. There is a lot of controversy in China regarding the use of digital pianos as a collective lesson instrument. Let's briefly analyze the possibilities of using digital pianos.

In terms of equipment, music schools should be encouraged to create digital piano music classrooms, continuously introduce advanced technological equipment, and promote the optimization of the teaching process; It is advisable to strengthen the training of teachers of collective piano lessons, encourage piano teachers to practice teaching collective lessons, gain experience and

use the real teaching experience of leading teachers. This requires systematic training of students and young teachers, creating a team of teachers of collective piano lessons.

The collective teaching in China needs to continuously improve through examples. The author will organize cases related to collective teaching from 2016 to 2023 to analyze the advantages of collective teaching at the current stage, the positive aspects in piano teaching, as well as the existing practical problems, and how to solve these problems and promote piano collective teaching towards more mature teaching methods.

**Conclusion.** In addition, in accordance with the characteristics of the teaching content of piano collective courses, a specialized teaching material for piano collective courses has been systematically developed. Due to the significant differences from traditional piano teaching models, it is necessary to make some comprehensive improvements on the basis of traditional teaching materials, as much as possible to improve the shortcomings caused by the form of collective courses, leverage collective advantages, and promote the development of piano collective courses in the fields of piano basic education and piano popularization education.

1. He, Zhangying. Research on Children's Piano Group Teaching/ Zhangying He // Home of Drama. – 2024. – No.2.
2. Wu, Yujia. Research on the Application of Intelligent Piano in Children's Piano Teaching / Yujia Wu // Grand View of Art. – 2023. – No.6.

## **DEVELOPMENT OF CREATIVE ABILITIES IN PIANO LESSONS (USING THE EXAMPLE OF THE MUSICAL GAME «MUSICAL SOLITAIRE»)**

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Music and teaching games are indeed an effective means to cultivate the creative ability of junior students in piano lessons. Through the combination of music and games, students' imagination, creativity and expression can be stimulated, help them better understand music knowledge, and cultivate their musical aesthetics and expression ability.

By using educational games, students can not only gain rich musical knowledge, but also stimulate their imagination, creativity and self-expression by participating in musical and gaming activities.

Educational games for music lessons are simple, interesting and very exciting. In piano lessons, teachers can design different play activities depending on the age and level of the students to help students gain a better understanding of musical knowledge and improve their creativity and performance skills. Thanks to these games, students will be able to learn to play the piano more easily and with pleasure, rather than monotonously and boringly learning familiar exercises. Learning through play is also an effective way of learning.

The development of students' creative abilities should be carried out in the unity of theoretical and practical experience, which includes teaching methods in the classroom and independent work of students. **The purpose** of this article is to analyze the possibilities of using the game "Musical Solitaire" in the process of learning to play the piano.

**Material and methods.** The methodological basis of the study is the work of scientists on the issues of professional training of a teacher-musician (Sim Qiang, Liu Jing, Zhang Xiaoshan). Methods of analysis and systematization were used.

**Results and their discussion.** In order to obtain optimal results in the process of teaching schoolchildren to play the piano, it is advisable to use the following theoretical principles:

1. Provide a free learning environment. In the classroom, teachers can create a positive, inclusive, inspiring and innovative learning environment. Students should feel free to express their ideas and opinions, and to explore and practice without any restrictions.