The role of theater architecture in music education

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Abstract. The article examines the role of theater architecture in music education. It is determined that the study of theatrical architecture is an important part of obtaining musical education, especially for those who plan to become a professional musician. As part of music education, students can study theater architecture and its impact on musical performances. It should also be noted that music education necessarily includes the development of the general culture of students, for this reason, the architectural features of theater buildings can contribute to the development of the general culture of students.

1 Introduction

Cultural development plays an important role in shaping future professional musicians. This includes knowledge and understanding of various musical genres, styles and eras, as well as the history of music and its impact on culture and society. To achieve cultural development, musicians should be able to study and perform various genres of music, from classical to modern, and get into the spirit of each of them. They should be familiar with composers and musicians who have created historically important works, and understand how they influenced music in different time periods.

Introducing future musicians to theater architecture can be important because it can help them understand various aspects of performing on stage. In theater architecture, many factors are taken into account, such as the location of the stage, the audience, sound and light acoustics, as well as facilities for spectators and artists. Knowing these factors can help musicians determine how best to prepare their music program and how to use light and sound to create the best effect on stage.

In addition, familiarity with theater architecture can help musicians navigate the stage and use its space to create a visual atmosphere. This can be especially important for musicians performing on large stages, where they may get lost without understanding how to use the stage space.

Thus, familiarity with theater architecture can be useful for future musicians, as it will help them better understand how to use the stage to create the best effect on the audience.

In addition, knowledge of theater architecture can help musicians understand what security measures and protocols need to be followed on stage. For example, they can learn

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how to set equipment on stage properly to avoid injury, or what materials to use for stage decoration to avoid a fire.

Future musicians will be able to understand better how technical specialists, such as sound engineers and lighting designers, work. This will allow future professionals in the field of music to competently cooperate with these specialists and get the best sound and light for their performance.

In general, familiarizing future musicians with theater architecture can be useful so that they can better understand and use the stage, work with technical specialists and ensure safety for everyone on stage. This can help them favorably influence the audience and achieve success in their career.

2 Materials and methods

In the process of writing the work, an analysis of the array of special literature was carried out, comparative and analytical research methods were used in the preparation of the article.

3 Results

Music education is a system of teaching music, which can be presented in various forms and structures, depending on the level of education and educational goals. However, in general, music education has a number of common features and structural elements. The main features of music education are:

– learning to play a musical instrument and/or vocals. This is one of the main components of music education, which allows you to develop the skills of performing musical works and improve your musical ear;

– study of music theory. This component includes the study of musical terms, musical notation, harmony, rhythm and other theoretical aspects of music;

– participation in the ensemble. Many study programs include the opportunity to participate in a musical ensemble, where students can improve their skills of interacting with other musicians and learn how to play in a group;

– study of music history. This component is the study of various musical eras, genres and styles, as well as the study of the life and work of great musicians [1].

In addition, the general development of future musicians should include the study of historical and architectural traditions that took place during the construction of concert halls and musical theaters.

Musical theater is a form of theatrical art that combines elements of music, singing, dancing and acting. In musical theater, music and singing serve as the basis for narration and the transmission of emotions, and dancing and acting complement them, creating a full-fledged spectacle on stage [2]. Musical theater can be presented in various forms, including opera, ballet, musical, operetta, etc. Each of these forms has its own characteristics and requirements for performers and technical support.

Musical theater is considered one of the most complex and technically demanding forms of theatrical art, requiring a high level of musical, vocal, dance and acting training of performers. Musical theater also requires high-end equipment for sound recording, lighting and stage decoration, which makes this art form quite expensive.

The history of theatrical architecture begins with the times of Ancient Greece. In ancient times, theaters were open amphitheaters with sloping viewing stands around the stage. One of the most famous such theaters is the Dionysus Theater in Athens, which was built in the V century BC. In the Middle Ages, theaters were often set up outdoors, as temporary structures for festivals and fairs. However, with the revival of art in the Renaissance, stone
Theaters began to be built in Europe. One of the most famous theaters of this era is the Fentzhal Theater in Florence, built in 1595 [3].

In the XVII and XVIII centuries, theaters in Europe became more luxurious and decorated. Theaters were built with many side boxes and balconies, which made it possible to accommodate the audience more comfortably. One of the most famous theaters of that time was the La Scala Theater in Milan, built in 1778.

In the 19th century, theaters became even more luxurious and decorated, using more complex stage mechanisms and lighting. One of the most famous theaters of that time is the Garnier Theater in Paris, built in 1875.

In the XX century, theaters became even more functional and adapted for various genres and performances. New structures and materials were developed that made it possible to build stronger and safer theaters. Today, theaters around the world have different architectural forms and styles, but they all have a common goal - to create a unique atmosphere that immerses viewers in the world of theatrical art [4]. Modern theaters can be both modern and minimalist, as well as traditional and colorful. Technological innovations make it possible to create more interactive and spectacular performances through the use of projections, sound and light effects, as well as computer technologies [5].

In recent years, the idea of environmentally sustainable theaters that would be more energy efficient and used for a long time without harming the environment has become popular. Some theaters also use modern materials, such as bioclimatic materials and recycled materials, which reduce the ecological footprint.

In general, the history of theatrical architecture demonstrates constant progress and development combined with preservation and respect for traditional forms and styles. Regardless of the architectural style, theaters always remain places where people can enjoy art and culture, and where unforgettable impressions can be created.

Most theaters are objects of cultural heritage of many countries of the world. They combine architectural, musical and theatrical elements, creating a unique atmosphere and emotional experience for the audience. The architectural features of the theaters of the world are often associated with their historical and cultural contexts, as well as with the peculiarities of the local climatic and geographical environment. For example, the famous Vienna Opera House has a rich history, dating back to 1869, when it was opened by Emperor Franz Joseph I of the Austro-Hungarian Empire. The architectural style of the theater combines elements of Neo-Renaissance and Baroque, creating a spectacular exterior of the building. Inside the hall, special attention is paid to acoustics, and the shape of the hall has a classic rounded shape, which allows the audience to have an excellent view of the stage [6].

The Sydney Opera House in Australia, opened in 1973, is one of the most recognizable musical theaters in the world. Its architectural style is a visual interpretation of the shape of a peanut, which creates a unique and memorable appearance of the building. The peculiarity of this theater is that it is located on the shore of the bay, which provides the audience with a beautiful view of the harbor and the Sydney Bridge.

Another example is the Shanghai Opera Theater Stage in China, opened in 1998. This theater has a modern style and is shaped like a lotus leaf, which symbolizes Chinese culture and history. The acoustics of the hall were developed using computer simulation to ensure high sound quality [7].

Thus, the architectural features of the musical theaters of the world have many variations and depend on their historical, cultural and geographical contexts. They create a unique atmosphere and experience for the audience and contribute to the world cultural heritage. In addition, the architectural features of musical theaters can also affect the technical capabilities and comfort of the hall for spectators and performers. For example, the shape and size of the hall, as well as the placement of the stage and spectator seats, can significantly affect the sound quality and visibility of the stage for the audience. Acoustics, which provides
clarity and depth of sound, is also an important aspect, given that musical theaters are designed for musical performances and opera productions.

There are many musical theaters in Russia, each of which has its own architectural features and historical traditions. For example, the Bolshoi Theater in Moscow, opened in 1825, is one of the most famous musical theaters in the world. The architectural style of the Bolshoi Theater combines elements of classicism and Baroque, and its interior is rich in decorative elements such as crystals, gold decorations and paintings [8].

Another famous musical theater in Russia is the Mariinsky Theater in St. Petersburg. It was opened in 1860 and is one of the oldest musical theaters in Russia. The architectural style of the Mariinsky Theater combines elements of neoclassicism and Baroque, and its ergonomics plays an important role in the design of the sound space of musical theaters. The task of architects is to create a comfortable and convenient environment for all participants of a musical work, including spectators, performers and sound engineers.

4 Discussion

Architectural design of concert halls requires a special approach that takes into account a number of factors, including acoustics, visual perception, comfort for spectators and performers, safety and functionality of the hall. An important aspect is the acoustics of the hall, which largely determines the sound quality of musical instruments and performers’ voices. To do this, it is necessary to take into account the shape and size of the hall, finishing materials, location of the hall and other factors [9].

Another important feature is the visual perception of the hall, which can be achieved with the help of certain design solutions. For example, the use of mirror surfaces and complex geometric shapes can create the impression of infinity and spatial depth, which increases the visual comfort of viewers [10].

The comfort for the audience and performers includes various factors, such as comfortable chairs, ventilation and air conditioning, as well as the ability to quickly evacuate in case of emergencies.

Safety is also an important aspect of the architectural design of concert halls. The hall should be equipped with fire and security alarm systems, video surveillance cameras and access control systems. These measures will protect visitors and staff from potential threats and help prevent possible emergencies.

The functionality of the hall is also a key factor in the design of concert halls. It should be convenient for concerts of various genres and events of various scales, as well as provide convenience and efficiency of the staff.

When designing concert halls, it is also important to take into account various technical aspects, such as lighting, sound equipment, video projection equipment and other technologies that can help create a unique atmosphere and provide high-quality sound and image during concerts [11].

The principles of ergonomics in the design of the sound space of musical theaters are presented in Fig. 1.
Let's consider these principles in detail:
- acoustic design. This includes choosing materials and designs that can provide good sound absorption and sound scattering to ensure high sound quality and minimize interference.;
- location of visual zones. The visual areas should be located in such a way that each viewer has a good view of the stage and can enjoy the sound in the most comfortable conditions;
- location of musical instruments and equipment. Instruments and equipment should be positioned in such a way that they are convenient for performers and sound engineers, and do not interfere with the audience. For example, sound engineers should have a good view of the stage and visual areas, and musical instruments should be positioned in such a way that their sound is evenly distributed throughout the space;
- sound insulation. In the sound space of musical theaters, there should be a minimum amount of noise that equipment or other noise sources can create. This ensures high sound quality and comfort for all participants of the musical composition [12].

In general, the design of concert halls requires an integrated approach and careful consideration of all aspects that may affect the sound quality, visual comfort, safety and functionality of the hall.

In addition to the above aspects, cultural and social factors must be taken into account in the architectural design of concert halls. Concert and theater halls should be able to reflect and conform to local culture and traditions, as well as provide socially significant spaces for communication and interaction of people.

Besides, it is important to take into account environmental aspects when designing concert halls, including the use of environmentally friendly materials, reducing energy consumption and the use of renewable energy sources. This will help to reduce the environmental impact and reduce the operating costs of the hall in the future [13].

Finally, when designing theaters and concert halls, it is important to take into account budget constraints in order to create an effective solution that would meet the customer's requirements and not exceed his financial capabilities.

In general, the architectural design of concert halls is a complex process that requires the integration of many factors.
In recent years, with the development of technology and changing needs of society, new innovative approaches have been used in the architectural design of theaters and concert halls. One such approach is the use of computer technology to create virtual models of buildings. This allows architects and customers to evaluate the design and functionality of the building quickly and efficiently, as well as conduct virtual tours and testing of sound systems.

Another approach is to use new materials and technologies to create more efficient and sustainable buildings. For example, you can use glass and metal structures that allow you to create free spaces and provide better sound insulation. Also, an important innovative approach is the use of interactive technologies and multimedia elements inside buildings.

Innovative architectural solutions of theaters can have an important impact on the quality of sound and musical design. One of the key factors affecting the sound in the theater is the acoustics of the room. Innovative architectural solutions can improve the sound quality in the theater, for example, by optimizing the shape and size of the hall, the use of special materials for wall and ceiling decoration, the location of sound-scattering and sound-absorbing elements, such as balconies, walls and ceiling.

The placement of musicians and the conductor on stage also plays an important role. Innovative architectural solutions can contribute to the creation of an ideal space for an orchestra, for example, by using special boxes and platforms to accommodate musicians, provide convenience for the conductor, etc. [14].

Another important aspect is the musical design of the theater, which may include not only the sound itself, but also the visual design of the stage. Innovative architectural solutions can help create a unique musical space that includes not only technical aspects, but also aesthetic ones. For example, the use of interactive multimedia systems, projections, lighting effects and other technologies can create a unique atmosphere and visual image for each performance.

In addition, it is possible to use innovative architectural solutions to create more flexible and adaptive theater spaces that can change quickly depending on the needs of each performance. Innovative architectural solutions in theatrical design can significantly improve the quality of sound and musical design, creating unique and unforgettable impressions for the audience and artists.

One of the features of innovative architectural solutions in theaters is the possibility of creating a more convenient and comfortable space for the audience. Optimization of the shape and size of the hall, the use of comfortable chairs, as well as the location of the audience seats in an optimal position for a better view of the stage and sound improvement – all this can significantly increase the comfort of visiting the theater and improve the impression of the performance.

An important factor is also the use of energy-efficient technologies and materials in the construction and decoration of theater premises. This not only reduces energy and water costs, but also reduces the harmful impact on the environment [15].

In addition, innovative architectural solutions can help theaters attract a new audience, including young people who expect more modern and interactive performances from theaters. The use of new technologies and interactive elements in theatrical performances can attract the attention of a new audience and increase the popularity of the theater [16].

In general, innovative architectural solutions in theater design can significantly improve the quality of sound and musical design, create a comfortable space for spectators and artists, improve environmental friendliness and attract a new audience, which ultimately will help theaters to maintain their role in the cultural life of society.
5 Conclusion

The study of the architectural features of theaters can have an important impact on the development of the culture of future musicians.

Firstly, such a study can help students understand and evaluate the role of music in theatrical productions and venues. They will be able to understand how a musical performance correlates with other aspects of a theatrical work, such as scenery, lighting, costumes, etc.

Secondly, studying theater architecture can help musicians understand acoustics and audiences. Each theater has its own unique acoustic signature, and studying architecture will help musicians understand how music sounds in different parts of the theater and how it is perceived by the audience. This can help them create more effective and impressive pieces of music that take into account the specifics of a particular theater space. Finally, studying theater architecture can help musicians interact with other members of the theater team. Knowing how a theater space is organized and how different elements interact with each other can help musicians collaborate with directors, lighting designers, costumers and other team members to create the best possible performance.

Thus, the study of the architectural features of theaters is important for the development of culture and professional skills of musicians.

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