

Research on the Architectural Design Positioning of University Halls

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Abstract: University hall is an important carrier of information exchange and sharing in higher education campuses, and the correct architectural design positioning can improve the value of university halls. There are many different features in the design and use of university halls and urban theaters. This paper investigates the feasibility study report and indexes of university hall projects, analyzes the indexes, construction scale and functional positioning of university halls in the pre-design period, summarizes some design suggestions, and believes that the use efficiency of university halls should be improved through intensive and compound construction to meet the needs of the rapid development of Chinas Universitys and universities.

Keywords: University hall; Design positioning; Architectural design; Intensive

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1. Introduction

Chinas cultural endeavors are progressing by leaps and bounds as the economy and society develop. Beijing, as the political and cultural capital, and Shanghai, as the economic capital, led the way in the construction of great theatres, which had a significant impact on the construction of theatres around the country, followed by the construction of large urban theatres. Simultaneously, a lengthy period of high-volume enrolment in colleges and universities has accelerated the development of university campuses to new levels. The importance of art education in the development of pupils has been widely recognized by society, and there has been an increase in the demand for theatrical buildings among university teachers and students. As a result, university halls function has shifted from assembly to multi-functional theatrical performance and academic conference. Theatrical events, academic conferences, and art education are all held in university hall on campus. It is necessary for important reports, special lectures, elegant art in universities, the opening and graduation ceremonies of schools and departments as well as the implementation of student's recreational activities, playing a unique role in spreading knowledge and culture.

2. Comparison of the positioning of urban theaters and university halls

The functional design and internal space of university halls are similar to those of urban theatres as a place for information exchange on campus. Both can use the theatrical space construction of a frame stage with audience seats, but there are certain distinctions in the users, land scale, and other factors. We can clearly see the placement of university halls on campuses by comparing the positioning characteristics of urban theatres ^[1].

As stated in **Table 1.**, urban theatres are government-funded professional theatres that host commercial cultural acts, drama and opera concerts, and are open to the general public. University halls are non-professional theatrical venues established within universities for the purpose of offering campus art

performances, art teaching training, and academic lectures. They are primarily utilized by students and teachers. The term “non-professional” refers to a building standard that differs from that of metropolitan theatres. Since the university hall is partially non-profitable, its use and upkeep necessitate ongoing financial support from the university. The differences between university halls and urban theaters are listed in **Table 1**.

Table 1. Comparison of urban theaters and university halls

Type	Urban Theaters	University Halls
Users	Commercial Theatre Company	Students and faculty
Site Size	Large land area and complete independent urban site	Smaller land area and internal campus site
Function Positioning	Commercial art performances, theater and opera concerts	Campus cultural performances, art teaching training, and academic lectures
Image Requirements	Independent styling in line with urban positioning	Match the campus environment
Design specifications	Meet the theater building design code	Meet the floor area index of general higher education institutions (2018 version)
Construction Standards	Determine criteria based on the number of seats	Determine space standards based on the number of students
Investment	Large-scale investment with payback pressure	Small-scale investment, no payback pressure
Operation and Maintenance	Professional culture company	School

As the above table shows, the design standard of urban theaters is extremely high for university halls, and it is obviously not feasible to simply copy the design standard of the urban theaters. For example, the investments in stage lighting and sound equipment are huge and do not play a great role in academic exchange and teaching. Most university halls will not configure such equipment but need the acoustic design and sight design of the audience halls. Hall construction should comply with the characteristics of their own users, to simplify the stage lighting and sound equipment, and adopt acoustic decoration that meets the actual needs. Whether the university halls are positioned as lecture halls, theaters, concert halls or activity centers combining teaching functions, the design planning of the preliminary stage is of great importance.

The pre-positioning and decision-making of university halls are closely related to the following factors: first, the index of university halls; second, the construction scale of university halls; third, the function positioning of university halls ^[2].

3. Definition and index of university hall

Hall refers to a special building for political assembly or holding cultural, economic and academic conferences. University hall is defined as being equipped with the functions of assembly, performance, academic report, inter-campus exchange and other activities in the Index of Building Area of General Colleges and Universities, which is beneficial to the construction of campus culture, which serves as an important place to cultivate sentiment and carry out quality education for students.

Index of Planning Building Area of General Colleges and Universities has a limited effect on the scale

of university hall buildings, and is an important design guidance. In the latest Index of Planning Building Area of General Colleges and Universities, the area of university halls should comply with the provisions in **Table 2**. For a university campus with 10,000 students, the average area per student is 0.3 m², and the maximum building area of the university hall is 3,000 square meters, which is the smallest school building. The building area of university halls with more than 20,000 people shall not be larger than 4,800m². Since the index area of university hall is too small, the hall is rarely planned as a separate building. The hall buildings in most universities are merged with other buildings on campus in the form of large-scale multifunctional lecture halls, forming buildings named information building, learning center, culture and art center, etc. In fact, in practice, most buildings have multiple functions, except that the functions contained in each unit are classified into the construction scale table according to 12 school building indicators in the stage of feasibility study ^[3].

In the feasibility study stage of project declaration, the stages, audience halls and some auxiliary spaces are declared in the area of university halls, and the exceeding areas of university halls like front halls and performance preparation space are declared in the form of activity room or logistics and ancillary room used for students and teachers. In this way, the development of domestic university halls has changed from halls focusing on academic exchange function to multi-functional information exchange and learning centers. This is the biggest difference from the positioning of social theaters. The former is more concerned with comprehensive use and teaching functions, while the latter one is a theatrical building serving for urban citizens.

Table 2. Building area index of halls

Scale of schooling	3000	5000	8000	10000	20000
Various colleges and universities	0.48	0.36	0.30	0.30	0.24

4. Construction scale of university halls

As analyzed above, even for large universities with more than 10,000 students, the hall area should not exceed 4,500 m² after considering the K value. Most of the audience halls have 800 to 1,500 seats, and some even reach 2,000. The university halls of this scale can take the specifications into account and meet the trend of the increasing number of university students. The construction scale of university halls should be established in the feasibility study stage according to the characteristics of school operation and the number of students and the construction funds. The following is an example of common university hall construction modes:

4.1. University halls of high-level comprehensive universities

High-level comprehensive universities refer to research-oriented universities with arts, science and engineering majors, with a level of 985 or 211 (double first-class). Most of these universities are double first-class universities, with large scale, complex disciplines and frequent international academic exchanges, which require higher comprehensiveness of halls. For example, Jilin University has more than 40,000 teachers and students in its central campus, whose university hall is merged with the teaching building of the library and administrative center, located on the west side of the building, with 1,100 seats and a total building area of 65,885 m², of which the university hall covers an area of 4,800 m², reaching the maximum index. Combined with the functions of the library and administrative building, it is named as the Graphic Information Center of Jilin University, with a length of 270 m. It also forms several squares and courtyards, becoming the center of the campus. In the feasibility study stage, the university hall is positioned as academic report center for hosting cultural performance, academic and office meetings.

4.2. University halls of general universities

Polytechnic universities refer to universities with a structure of science and engineering disciplines greater than 70%, and the university halls of polytechnic universities mainly assume the function of science and engineering academic report center. For example, Zhengzhou University of Technology has more than 25,000 teachers and students, only 10,000 in the first phase, which is smaller than that of Jilin University. It is a general university at provincial level. In order to save costs, the university merged the hall with the comprehensive building of public teaching building, with 749 seats and a total building area of 32,354 m², of which the university hall covers an area of 4,800 m², reaching the upper limit, and it was built as a teaching center together with the teaching building. In this case, the cost of stage mechanical light was not carried out based on the investment restriction. In the feasibility study, university halls are positioned as halls, academic lecture halls and theatrical performance stages.

4.3. University halls of private universities

Private universities are universities not financed by the government, with higher fund pressure and lower requirements for university halls. For example, Nanning University of Technology is a university funded by Guangxi Beibu Gulf Investment Group Co., Ltd., and its university hall has 784 seats and a total building area of 9,700 m², of which the hall area is 4,800 m² and the activity room for teachers and students is 4,900 m². Private universities are more price-sensitive, and the overall construction standard of the hall is relatively low, which only meets the functional needs of basic performances and meetings. Driven by capital profits, private universities prefer to build 500-person halls and many 100-person lecture halls to fill the area index of the halls, and gymnasiums will be used to hold 2,000-person gatherings. A differential mode of 2,000-person gymnasium, 500-person hall and 100-person lecture hall was formed. Part of the large-scale assembly function of the hall has been transferred to the gymnasium, and the price of 100-person lecture hall was lower than that of 500-person hall, and the utilization rate was higher. This design idea of reducing the area and quality of halls is favored by many private universities. For example, Kede University of Capital Normal University, as a private university, has only 683 auditoriums, which can meet the basic needs of conferences and performances, and the gymnasium is used as an activity place for large-scale gatherings.

4.4. High-standard university halls

High-standard university halls often undertake not only the cultural performances and teaching needs on campus, but also some high-standard conferences and performances in the city. This kind of hall will be clearly positioned when the feasibility study is established. For example, Junwu Culture and Art Center of Guangxi University has made it clear that it will be used as a provincial performance theater in the future by considering the daily teaching use of Guangxi University. The art center has a theater with 1,939 seats and a multi-functional concert hall with 469 seats, which are positioned as super-large theaters according to the Code for Design of Theater Architecture JGJ 57-2016, and can hold opera performances. The total investment is 230 million yuan, and the project has won Luban Award. This kind of high-standard theater can be used as provincial performance theaters. At the same time, the Art University is set in this building, which is combined into a teaching building and an art center. Universities with high-standard theaters are generally 211 project universities or above, with higher requirements for the use of halls, and the needs for exhibition and reception. Finally, Junwu Culture and Art Center of Guangxi University is positioned as a high-grade theater with a total construction area of 19,237.1 m², including 4,762 m² of university hall and 14,475.1 m² of education rooms for art University.

The construction scale of university halls should be determined by the compilation unit of project proposal and feasibility study with universities or related users at the beginning and reported to the

government for approval. The construction scale of university hall is influenced by the number of students, construction funds and functional categories of university hall. In practice, if the area of university hall reaches the upper limit of the index, the general practice is to allocate the index area of other school buildings to meet the actual use needs of university hall.

5. Functional positioning of university halls

Index of Planning Building Area of General Colleges and Universities (2018) proposed that the halls of general colleges and universities should be planned and constructed in a unified way with the activity rooms for teachers and students to improve the efficiency of use, and the halls of art colleges can be planned and constructed in a unified way with the experimental theater. The functions of university halls are intensive and multifunctional (**Table 3**).

University halls are suitable for holding cultural performances. Compared with the activity room of the student association, the hall has a professional rehearsal place and performance venue, and its stage performance effect is better than that of the activity center, which can accommodate more audiences. University halls provide places for theatrical performances for teachers and students activity rooms, and teachers and students activity rooms are provided for performers and audiences for community theatrical activities. The construction of university halls and teachers and students' activity rooms will promote students' entertainment performances and literary exchanges, improve the frequency and intensity of the hall, and intensify land resources to meet the needs of teachers and students for recreation and rest.

University halls can also meet the needs of holding large academic conferences. Compared with the internal classrooms and lecture halls inside the teaching building, university halls have large capacity and high quality, which can better meet the needs of large-scale lectures and ceremonies in terms of acoustics and sight. The university hall usually has 800 to 1,200 seats, and the seats of large hall can reach 2,000, which can accommodate more participants. At the same time, it can also serve the universities and off-campus institutions. The lecture halls of departments are mostly used for small and medium-sized academic conferences. The capacity of university halls needs to be different from that of lecture halls (amphitheaters) and multi-functional gymnasiums of these departments to meet the academic exchange and ceremony needs of the university. Similarly, the compound construction of university halls and teaching buildings (University buildings) is conducive to the efficient operation of university halls by improving the frequency and intensity of use, effectively employing land resources for teaching and scientific research, and meeting the various needs of teachers and students^[4].

University halls can meet the needs of art teaching. Colleges and universities with art majors need sufficient teaching space for music and art. Rehearsal room, piano room, multi-functional hall for teaching and music classroom are all functional teaching spaces needed for whose majoring music and dance. Combining the educational space of art major with the university halls can manage and improve the use efficiency of buildings. The functional combination of university halls and art teaching needs to be determined as soon as possible in the pre-design positioning stage^[5].

In the stage of project construction and feasibility study, the university needs to determine the functional positioning of university halls according to its academic level, discipline characteristics and art teaching. There are usually three combinations of functional positioning of university halls:

- (1) The hall focusing on the function of university hall for cultural performances, serving as an important place for students to perform activities, is constructed together with the activity room for teachers and students.
- (2) The hall focusing on the academic conference function of the university hall, serving as a lecture hall for large academic conferences, is constructed together with teaching buildings.

- (3) The hall focusing on the art education function of university hall, serving as a training place for art colleges, is constructed together with art education colleges.

Table 3. Scale and functional positioning of domestic university halls

Building Name	Time	Site Size	Space Mode	Academic Level	Functional Positioning	Scale layout
Zhejiang University Zijingang Campus Small Theatre	2003	2,800m ²	With student activity center	985	Concerts, cultural performances, conferences and training	1,151 seats, including 643 seats in orchestra and 508 seats in the balcony. The stage entrance is 14 m wide, 7.5 m tall, 16.5 m deep and 22.3 m high.
Lanzhou University Student Activity Center Auditorium	2004	2,000m ²	Multifunctional theater	985	Cultural performances, conferences and training	1,270 seats in the auditorium, with two rows of audience seating, equipped with a rehearsal room, dressing room and lounge
South China University of Technology Academic Lecture Hall	2005	6,500m ²	Multi-theater	985	Large-scale conferences, lectures, concerts	1,190 seats in the grand hall, 462 seats in the concert hall
Science and Technology Hall, University Road Campus, China University of Mining and Technology	2006	1,800m ²	With canteen function	985	Conference lectures, cultural performances	904 seats in the auditorium, located on the fourth floor of the building, with a cafeteria downstairs
New Tsinghua Academy Theatre, Tsinghua University	2011	17,860m ²	Multifunctional theater	985	Large-scale concerts, annual meetings, concerts	The auditorium has a total of 2,011 seats, with seats in orchestra and balcony. The stage is equipped with double side stages, the main stage entrance is 18 m wide, 21 m deep and 11.5 m tall
Dingxin Building, Qianwei Campus, Jilin University	2018	78,100m ²	Multifunctional theater	985	Conference lectures, cultural performances	two rows of seating, total seating capacity of 1,160 seats
Guangxi University Junwu Culture and Art Center	2019	22,517m ²	Multifunctional theater	985	Conference lectures, cultural performances	1,939-seat theater and 469-seat multi-functional concert hall and 2 groups of arts education rooms

Theater of Student Activity Center, University of Physical Education, Zhengzhou University	1992	1,600m ²	With the Student Activity Center	211	Student performing arts activities, cultural performances	The theater has a seating capacity of 1,000 seats and is located on the third floor of the building, with the student activity center located downstairs
Assembly Hall, University City Campus, Guangzhou University of Chinese Medicine	2004	2,190m ²	Multifunctional theater	211	Large-scale conferences, concerts, corporate annual meetings	2,086 seats in the General Assembly Hall, seating area is divided into two levels
Beijing Language and Culture University Comprehensive Building Auditorium	2002	921m ²	Multifunctional theater	Provincial	Conference lecture-based	The theatre has 1,213 seats, the depth of the stage is 17, the width is 36 m, about 25 m high; the stage entrance is 15 m wide, 8 m high; the audience hall is 29 m wide, 28 m deep, 20 m high
Shanghai University of Technology Auditorium, Music Hall and Small Theatre	1937	1,600m ²	Multi-theater	Municipal	Conference lectures, musical performances	800 seats in the auditorium, 300 seats in the concert hall, 270 seats in the small theater
Auditorium of Lingang Campus of Shanghai Electric University	2013	1,000m ²	Single Theatre	General higher education	Conference lectures, cultural performances	Large auditorium with 450 seats, stage entrance of 12 m, 10 m deep, 5.8 m tall
Auditorium of KD University of Capital Normal University	2004	3,515m ²	Single Theatre	Private	Conference lecture-based	The auditorium has 683 seats
Shanghai Donghai Vocational and Technical University Auditorium	1993	1,500m ²	Single Theatre	Private	Conference lectures, cultural performances	The auditorium has 420 seats

6. Conclusion

From the index, building scale and functional positioning of the halls, it can be seen that the early positioning of the university halls should be considered according to the characteristics of academic level, its scale, and construction funds. At present, there are many problems in university halls, such as improper

control of design scale, repeated inefficient investment, low utilization rate of stage machinery and equipment, and difficulty in transforming teaching functions in the later stage, which are the consequences of chaotic positioning of university halls in the early stage. Therefore, the construction of university halls should strengthen the communication among architects, owners and users at the initial stage of the project, clarify the planning and positioning of university hall, and avoid repeating previous mistakes. University halls have the characteristics of non-operation, and its main users are students. Whether there is an art University in the school has a great influence on the positioning of university hall. It is necessary to strengthen the research on university halls and explore an economical, applicable and highly adaptable design strategy of university halls to meet the use needs of domestic universities.

At the same time, the strict restriction on the area of university halls in the Index of Planning Building Area of General Colleges and Universities has hindered the construction of university halls, and the functions of quite a few university halls are affected due to the area restriction. The index of university halls should be relaxed appropriately to meet the needs of university campuses for the positioning of university halls in the new era. The compound construction of university halls and other buildings is the development trend of university hall.

Disclosure statement

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