

# Preliminary Study on the Innovative Design of Campus Culture Wall in the Context of Artificial Intelligence

-- Taking Wu Han Jingkai foreign language campus culture wall design as an example

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**Abstract:** With the development of artificial intelligence technology, the emergence of ChatGPT and Midjourney has a great impact on people's daily life; at the same time, based on our country's emphasis on education and teaching, which puts forward higher requirements for the construction of school campus culture environment. As a landscape representing the spiritual connotation of the school and a concentrated miniature of the school environment, the cultural wall has gradually occupied an important position in the construction of campus culture. For colleges and universities with high artistic and cultural campus atmosphere, the design of culture wall needs to be unique and charming; while some colleges and universities still have the same style of culture wall design, lack of cultural heritage of the school and lack of innovation. The article will combine the case study form, from the campus cultural wall design scheme, the choice of material technology and cultural wall and artificial intelligence technology, combined with the new media art innovation and interactive technology to try to explore the artificial intelligence technology involved in the campus cultural wall design new ideas.

**Keywords:** Artificial Intelligence; New Media Art; Cultural Wall; Campus Culture.

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## 1. Introduction

### 1.1. Research Background

With China's emphasis on the education industry has led to the rapid development of campus culture construction, school renovation, expansion also makes the campus environment planning and design boom has undergone a major change, for this trend the status of the campus culture wall design has gradually become important. For different regional cultures and other demand factors, shaping the image of the campus culture wall also highlights the unique connotation and style of different schools. According to the call of the Ministry of Education issued to strengthen the construction of school culture, schools will be the campus culture construction as the main content of the construction of school culture, and with the real-time propaganda of the campus culture wall, campus enrichment, rendering the cultural atmosphere and other functions of the school's main theme, the development of the course of development and teaching connotation of the school publicity, and cultivate students a strong school sentiment. Schools to the spiritual culture of education can use the neat, beautiful campus culture wall to bake the campus cultural atmosphere, which is also conducive to improving students' aesthetic ability and hobbies, the cultivation of creative ability. Now in the primary and secondary school campus culture construction planning and design, people on the construction of cultural wall design style, material texture selection gradually began to have a purpose, differentiated choice of use, but for the construction of cultural wall design planning and cultural wall and the use of the current new media technology research is relatively small. Now there are still some schools with the same style of cultural wall design, or school cultural wall design effect monotonous, not according to the local campus history and culture for targeted design. Based on the current situation, in order to avoid the recurrence of such a problem, for the Wuhan Jingkai Foreign Language

Complex Building of the three to five floors of the cultural promenade wall for the status quo analysis and design optimisation, and with the help of the current new media technology applied to some of the cultural wall design, so as to achieve the enhancement of secondary school characteristics of culture.

### 1.2. Research Significance

Campus culture construction is an important part of school education can not be ignored, but also a specific expression of the school's cultural style, most of the colleges and universities culture wall design is to promote the school education and teaching for the purpose, of course, the campus culture wall is also conducive to regulating student behaviour, cultivate students' aesthetic sentiments, and promote students' physical and mental health. According to some colleges and universities at present, there are cultural wall design similarity, campus cultural wall design content, style monotonous and did not according to the school's history and culture of the status quo of targeted design, try to the new media interactivity, holographic features into the design of the cultural wall, to solve the traditional school cultural wall design layout monotonous, style inconsistency, the lack of communication and interaction with teachers and students, to create an open, dynamic sharing-type The campus is an open, dynamic and shared space for communication. Therefore, this paper combines the Wuhan Jingkai foreign language campus culture wall design of the actual situation, research and analysis, optimise the design strategy and the new media technology involved in the cultural wall display, as well as some creative forms of presentation of drinking water, etc. to promote the exploration process of the construction of campus culture planning in colleges and universities.

### 1.3. Research Purpose

Campus culture wall as one of the effective ways of school culture connotation dissemination, through the text, images

and other information conveyed, so that students in the invisible get subtle cultivation. For the lack of unified design planning for the construction of school culture wall, and there are repetitive and old design panels, try to explore from different aspects of campus culture wall, such as ornamental, cultural, artistic, interactive, etc., from different perspectives. It tries to apply environmentally friendly and lightweight new materials to the culture wall, as well as tries to intervene the interactivity and holography of new media technology into the culture corridor, classroom facades and watering holes. According to the functional classrooms on different floors of Wuhan Jingkai Foreign Language School Comprehensive Building set up cultural wall zones with different themes such as music, dance, etc. to create a campus atmosphere of situational space and free sharing; therefore, it tries to intervene the digital media technology into the planning of walls such as the cultural promenade, classroom exterior walls, and watering holes in the rest area. The theme culture wall will be opened by gesture-sensitive command; the operation of the drinking station at the drinking fountain can be operated by voice dialogue, such as water dispensing, temperature adjustment, etc., and the music and video clips on the theme culture wall can be played by clicking and pulling down, and the theme introduction video will be displayed in the form of holographic projection. Through this coupling of cultural wall and new media art innovative interactive technology, try to explore the new ideas of digital cultural wall display wall design.

## **2. Basic Concepts and Related Theories**

### **2.1. Definition of Related Concepts**

#### **2.1.1. The Concept of Wall**

"Wall" is also called "wall, wall", which is ubiquitous in architecture. First of all, "wall" in architecture refers to a kind of space partition structure in the direction of heavy and straight, which is used to enclose or divide the area of the building components. Secondly, according to whether the wall plays a load-bearing role in the building, the wall is divided into load-bearing walls and non-load-bearing walls. According to the distinction of materials and construction, walls are also distinguished as solid walls, cavity walls, composite walls, concrete walls, curtain walls, etc. Accompanied by the development of glass material technology, and later the emergence of reinforced glass, through the use of large pieces of glass instead of the traditional stone walls, brick walls, which also created the popular use of glass curtain walls. As early as the early twentieth century, architect Gropes first used glass curtain wall instead of traditional brick wall when designing the Bauhaus school building. Later, with the development of social life, people's different needs for the wall makes the wall in addition to the role of load-bearing and enclosure, but also need to wall with sufficient strength and thermal insulation, heat preservation, wind resistance, waterproofing and sound insulation and other effects. Therefore, in the architectural design of the wall thickness and materials need to be based on different requirements, different needs to choose.

In China's ancient architecture, whether it is a courtyard or palace, temple altar, gardens are surrounded by high, short, long and wide walls. As the Northern Song Dynasty poet Su Shi's "Butterfly Lovers", which depicts "Swings in the wall outside the wall, wall walkers outside the wall in the wall of beautiful people laugh." Walls may have originated from the

primitive period when tribes developed into early cities, as shown in the poem "Zheng Feng", which reads, "I will be Zhongzi Ruoxi, and I will not cross my wall." And in the "Mozi - prepare the city gate" and the Song Dynasty "building method style" and other books, there are detailed descriptions of how to build walls and wall classification and other methods, also from the Chinese characters "wall, wall, plug" and other Chinese characters can be seen in the early wall is constructed from clay. In addition to being closed and fireproof, walls also have a protective function. For example, Emperor Qin Shi Huang, who united the six countries, ordered the walls built by each country during the Warring States period to be built to link up the Great Wall of China, which kept barbaric enemies out of the capital city, and thus walls became an effective means of enclosing space and protecting it.

In Chinese architecture, "wall" also has a high aesthetic quality, for example, in China's classical gardens often seen on the city wall constructed on the corner of the corner tower, or the corner of the city wall to build a corner platform; indoors, the screen and the wall can also be regarded as the role of the wall of the partition. From the Nine Dragons Wall in the royal gardens to the shadows of the mountains in Beijing's courtyards, they have become decorative landscapes. Thus, the wall is one of the most important means of shadow creation, as "how deep is the courtyard", through the wall division to create the effect of spatial change. In Suzhou Garden, there are also a lot of use of the wall as a cross, shelter, frame the scene to create a scenario of spatial interest. And in the daily, campus, by the cultural wall blocking wall, or interspersed in the campus green landscape, both as a carrier of campus culture dissemination, but also with artistic, cultural and ornamental campus cultural heritage of the expression.

#### **2.1.2. Concept of Cultural Wall**

Culture wall is one kind of wall, which is a humanistic landscape designed according to cultural, conceptual and aesthetic constructions to create an effect with artistic atmosphere. At the same time it can also show people the concept of culture, but also play a role in propaganda culture, advocate civilisation, green environmental protection concepts such as publicity, education, and the use of cultural walls can also promote the city's branding and help the city to enhance the image of the cityscape of a beautiful landscape.

#### **2.1.3. The Concept of Campus Culture Wall**

Campus culture construction wall is considered to be the most important specific content of the construction of school culture, is the most important observation point of the cultural factors of campus culture construction, is a college school culture connotation of the specific situation of the concentration of the embodiment. Promoting the fastest way to reach the spiritual civilisation construction methods and material carriers is not a prerequisite for advancing the spiritual civilisation construction of the school. Campus culture construction is considered a form of life for art students, and its specific contents are widely used. With the help of colorful specific content and diverse specific forms, to further enhance the school students' life values and noble moral sentiments, ideological connotation and the formation and development of behavioural patterns play a deeper impact. Each school and college has its own unique history and culture and school environment, however, not every cultural wall can play a beautiful and revelation of the role, the messy design and production will hinder the overall environment of

the school's beauty. With the help of campus culture construction wall, reconstructing different educational theme space and different types of activities to show the purpose and quality of education and teaching quality.

## **2.2. New Media Arts**

### **2.2.1. Digital Media Technology and Art**

The definition of new media is "a medium for information dissemination based on digital technology and using the network as a carrier." Compared with traditional media, new media is a new type of media form, which is accompanied by the development of science and technology. It is a mode of communication that uses digital technology, the Internet and other means to disseminate information and provide visual information services, and is characterised by interactivity, inter-temporality, digitisation, high efficiency, rapidity and so on. As Wang Bin, Secretary General of New Media Industry, said, "New media is a media with an innovative form based on digital information technology and characterised by interactive communication." In a narrow sense new media refers to traditional media using new technological means, such as the Internet, to disseminate content, such as newspapers, radio, television and so on. In a broader sense, new media refers to all individuals who use new technological means to disseminate information, including not only the media industry as we know it, but also WeChat, Weibo, QQ and so on. The rapid development of new media is also a revolution in the media industry, and the advantages of new media technology, such as interactivity, digitisation, holography, networking, etc., are also more adaptable to the needs of the times and society.

## **3. Field Research and Analysis of Campus Culture Wall in Wuhan Jingkai Foreign Language School**

### **3.1. Field Research and Analysis**

#### **3.1.1. Analysis of the Current Situation of the Site**

Through the team visited the Wuhan Jingkai Foreign Language Middle School to investigate and analyse, found that the Wuhan Jingkai Foreign Language School campus culture wall is still in the primary stage of development, some culture wall is mixed soil system of white clay wall, some are hand-painted spray paint for wall painting, there are also some relief wall, resulting in the design of the culture wall is not uniform style. Secondly, in the material, the material of the cultural wall with the change of the times and gradually rich, brick, ceramics, glass, metal, simulation of stone wood and so on. Through the investigation and analysis found that Wuhan Jingkai foreign language campus culture wall is mainly stone as the main performance of the material, the use of other materials is very little, in the culture wall in addition to the removal of metal materials, masonry and other use, innovative materials basically did not show. In terms of colour, the colour of the cultural wall is mostly white and grey, and the frequency of the use of colour changes is small. In the campus cultural corridor in the expression of colour needs to be selected more flexible and free, bright, lively colours to attract teachers and students. In the past, the cultural wall is mainly used in the expression of the content of the veneer, painting, calligraphy and other ways of expression. In the campus culture wall content is more to express the culture of celebrities, famous quotes, biographies and so on. Through the investigation of culture as the theme of the cultural wall

design, the cultural wall is mostly text, resulting in dazzling effect.

#### **3.1.2. Research Conclusion**

Through the survey found that the lack of connotation of secondary school campus culture wall is the main problem, most of the school campus culture wall is still fetishism, there are also some schools culture wall design framework, form from the same design company, and thus in the design, material expression of the same, the lack of innovation in the material phenomenon. For Wuhan foreign language campus culture its most important feature is the need to "international exchange and cooperation culture" is reflected, which is also the purpose and characteristics of its schooling.

## **3.2. Problems of Campus Culture Wall Design in Jingkai Foreign Language Schools**

### **3.2.1. Lack of Campus Culture Connotation**

Culture wall is an important part of the performance of campus culture construction, is the carrier of campus culture and school spirit connotation. Through research and observation, the cultural construction of secondary schools is to express the cultural wall as a carrier, but found that most of the cultural wall cultural connotation is missing, no consideration of the school's cultural spirit and traditional culture, just simple construction of the cultural wall slogans, so that people do not feel the feeling of the school spirit. And corridors, stairwells, fences, steps and other cultural wall performance is mostly text or celebrities, this text stacked campus culture wall will only appear dense, dazzling.

Campus is the site of student learning and life, campus culture wall design should be to convey campus culture, service students as the basis, detached from the students of the cultural wall design has lost the essence of the significance of the construction of the cultural wall needs to reflect the education of students and influence, reflecting the atmosphere of teacher-student exchanges and educators on the pursuit of truth, goodness and beauty.

### **3.2.2. Lack of Innovative Spirit**

Lack of innovative spirit is manifested in the cultural wall content, colour and other aspects of the singularity. In the design of the cultural wall used to bring the way, did not take into account the spirit of the school campus culture, and did not focus on highlighting the campus culture and regional culture, just the traditional quotations and patterns carved on, simply the pursuit of plane, formal, resulting in a single campus cultural wall, repeat. Secondly did not see the cultural wall is to improve the quality of campus culture carrier, the lack of appreciation of artistry, campus culture wall of artistic expression, colour display and other forms of missing serious. Finally, the commercialisation of cultural wall design, the selection of materials only take into account the economic benefits it brings, focusing only on the use of new materials, while ignoring the choice of materials according to local conditions, ignoring its function of educating people in a particular campus culture.

## 4. Optimisation Strategy of Layout Design of Campus Culture Wall in Jingkai Foreign Language School

### 4.1. Layout Design in the Cultural Wall

#### 4.1.1. The Outer Wall Design of the Campus Culture Wall

After determining to divide the design framework of the culture wall and the theme of the board, partition planning for each floor, the use of each functional area, and then carry out the layout design of each cultural wall. Then the designer will be divided according to the theme of the cultural wall for text, pictures and other visual elements of the organic arrangement of combinations and design, at the same time in the layout design of the cultural wall also need to pay attention to the theme of culture, the picture effect whether the expression is reasonable, and whether it has the power of artistic expression. In the Jingkai foreign language campus culture wall design,

according to the complex floor of the functional classroom culture wall design, the third floor is divided into the music theme, musical instruments can emit musical sound, and can cause sound resonance. The shape of the outer wall of the classroom is designed to imitate the sheet music form of the minor pentatonic scale of the guitar, with each circle representing the note point of the guitar, and when rotated and opened, it is a brief introduction to the type of the instrument. When rotated, it is accompanied by the musical sound of the instrument. This not only increases the interactivity, but also lets the students feel the joy of "playing" in it. The external wall of the piano room on the third floor is designed as a vinyl record interactive wall, using music to communicate audibly. By tapping and playing their favourite music, it creates a creative interactive space for students. Adhering to the design concept that every wall and every object is art, the dynamic silhouettes of music characters are integrated into the interior design for the light switches, which not only enriches the wall modelling, but also makes the piano room space more vivid.

Four-storey piano room facade



Figure 1. Music themed classroom exterior wall rendering

Piano room



Figure 2. Dance themed classroom exterior wall rendering

Albert Einstein once said, "Interest is the best teacher for learning". So when we cultivate children's sense of musical rhythm, we should firstly stimulate their interest in musical activities. In the campus environment to create, we might as well pick some decorations about musical instruments, so that children feel the inculcation of music all the time. The design elements in the middle of the wall are represented by classical

music, and the figurative classical musical instrument elements enrich the wall modelling. Therefore, the fourth floor of the management communication room outdoor wall design, modelling wall on the left side of the card modelling wall, the right side of the music film wall, modelling wall with colourful resin plastic boards put together in the form of MUSIC, plastic boards carved with anecdotes of musicians,

white PVC boards attached to the commonly used teaching sheet music. The wall is covered with wood veneer, which not only enriches the modelling content, but also protects the original wall surface. The overall shape imitates the form of a music film and contains the world's top ten hits. It is displayed through the concave and convex way, which increases the sense of layering in the space. On the other side, the colour blocks of different lengths are like jumping scale symbols, just like the music that is flowing. The raised three-dimensional circles are arranged in an irregular pattern to form a succession of seven tinkling notes, which make a

corresponding musical sound when they are struck. Each note records a famous quote from a different musician, which stimulates students' empathy for music through the famous quotes. Through the digital display means, together with the human body sensor system, it creates an interactive space that can be played and listened to. The silhouette of the city at night is used to show the shape of the piano keys, and by stepping on the keys on the ground, the corresponding wall will light up with different notes, bringing a fantastic visual effect and interesting musical experience.

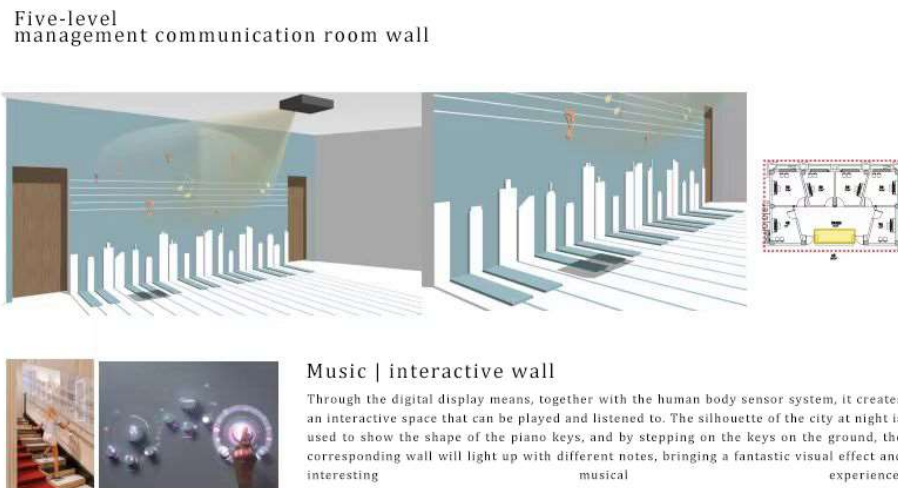


Figure 3. Effect of music-themed leisure and communication area

Finally, the corridor on the fifth floor, which includes the piano room and the dance classroom, the cultural content is based on describing the types of music and dance, respectively, with local notes representing the characters or images of the main types, and the simplified deformation of the letters of the English alphabet for dance (representing the letters DANCE) and music (representing the letters M) in the modelling aspect to render the artistic atmosphere, and the main body pieces are enriched by the raised modelling to

enrich the wall level and add a sense of interactivity. For the design of the dance outdoor wall, the dynamic silhouettes of ballet dancers, beautiful curves, fluttering skirts, bringing a touch of rhythmic elements to the space. Such a gentle colour combination creates a romantic and elegant atmosphere. When teachers and students walk in the corridor, the dancers on the wall will dance and interact with them through human sensors.



Figure 4. Dance-themed classroom outer wall effect

#### 4.1.2. Text and Picture Layout of Campus Culture Wall

The layout design of the cultural wall not only contains to follow the basic principles of layout design and production, but also pay attention to the clarity of the picture and the location of the design and arrangement of the two directions,, in the choice of Baidu image search, must pay attention to

Baidu image itself whether the quality can pass. For example: in the Baidu image search, when a special character's two eyes are facing each other, it should be necessary to reserve enough space to arrange the relatively most important text introduction content.

### 4.1.3. Colour design in the Cultural Wall

After designing and arranging the overall layout, balance and image of the wall, the last thing that must be determined is the overall colour scheme of the wall. Colour is the subjective feeling of the viewer viewing the picture, when viewing most people will forget the layout shape, size and specific text introduction content. General standard colour is to shape the unique image of the general school and aspire to create a special colour sense or a group of colour sense reduction system, used to express the general school image of school style and for the school service company.

In the specific design and production process of the party culture wall, to widely and boldly grasp the universal standard colour. First, in addition to be used to act as a similar colour of the universal standard colour, should also join the appropriate from the side of the assistance of colour, such as cold and warm tones, colour and light compared to the universal standard colour, etc., are often chosen to match the colour, because of a single colour sensory system is established, it is more likely to gradually form the impression of the cold and bleak.

Secondly, some colleges and production-oriented enterprises logo design era has been relatively long, the application of the general default colour set outside the specific process is not ideal. At this point, professional designers must choose a certain range of colour scale, must make appropriate adjustments to it, in order to meet the specific requirements of leading the new era of colour sense. Around the third floor of the drinking water office theme of the specific content of the cultural wall is introduced, the wall layout theme design for the western fine arts cold abstractionism, according to the cold abstractionism representative of the style of Mondrian's work, according to his work "red, yellow and blue" picture of the three colours used in the design of the cultural wall layout framework, in the typesetting of the three colours but also pay attention to the distribution of multi-colour can not be cluttered, the shape of the combination of rectangles as well as blocking the position. After determining the design framework, briefly introduce the background, life and works of the representative characters and other information. Due to the limited size of the cultural wall, which can not be introduced in detail through the digital screen holographic playback display.

## 4.2. Innovative Interactive Design of Campus Culture Wall based on Ai Technology

### 4.2.1. Creating an Interactive Culture Wall

In the public space of the school, the interactivity of the culture wall means that it should be connected with the surrounding environment, which can complement each other's advantages and form an interactive space setting, so that the overall campus environment can be effectively coordinated. With the development of science and technology, digital media influences the campus environment, making the cultural wall display forms diversified. The improvement of the school multimedia information technology system opens a new form of "smart campus" electronic culture wall design. In the prescribed range by gesture touch sensor display screen switch to show the campus electronic culture wall, its advantages are reflected in the physical interaction, voice interaction and other aspects. For art students oriented towards the development needs of multimedia art, display design, visual communication and other related professions, they receive personalised training and are able to plan their future professional development path. In the process of multimedia culture wall design, teachers should integrate text, images, audio, etc. according to the students' intention, and then highlight the interactive characteristics of the design, clarify the theme and colour tone, and fully reflect the background music and animation effects, so as to give the viewers the best feeling in vision and hearing, and make them get the information in the inculcation of art. In addition, the school can also try to build online "multimedia virtual music, dance museum" production model, to build a virtual display space, the viewer logs into the school's official website, through the network to watch online. The cultural wall can be zoomed in, zoomed out, moved and other interactive actions according to the needs of the viewer. In addition, the cultural gallery on the third to fifth floors of the Complex Building is also equipped with an introduction to the scene of the painting, as well as the source of the colours used in the painting. By setting up niches on the culture wall, pictures and objects as well as introductory cards are placed in them, realising the fusion of flatness and 3D on the culture wall.

Exterior wall of the fourth floor piano room

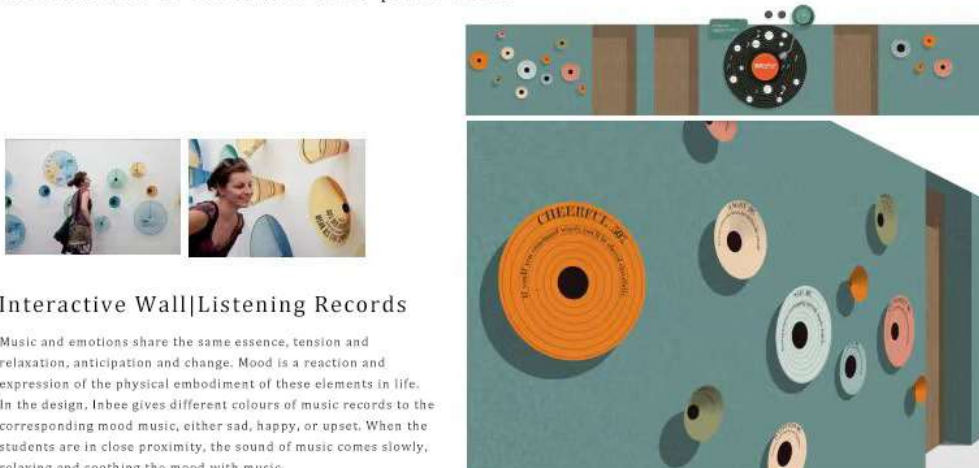


Figure 5. Music Theme Effect

#### 4.2.2. Enhancing the Visual Design Colour of Campus Culture Wall

Reasonable selection of the colour of the campus culture wall is helpful in enhancing students' colour perception and improving their aesthetic ability. For example, the music facade of the management exchange room on the fourth floor chooses quiet blue for the background colour design of the wall, followed by white keys as embellishment, adding some music symbols in moderation and adopting vibrant orange as the compatible colour, which allows students to relax from long hours of study and allows them to have an interesting musical experience in an intangible way.

### 5. Conclusion

With the gradual improvement of the school campus culture construction standards, requirements, the school of campus culture environment construction standards are also rising. Many school leaders and environmental designers also attach great importance to the spiritual nurturing role of the campus culture wall, comprehensively explore the educational significance of the campus culture wall, and in the planning and design of the campus culture wall when the school has changed the past consistent educational design consciousness, pay more attention to the sense of the educational significance of the campus culture wall and the sense of art, in order to incorporate a sense of humanism and highlighting the artistry, truly realise the campus culture wall, the inheritance of campus culture, inspiring the beautiful souls of students and renewing the beauty of the educational significance of the campus culture wall. Campus culture, inspire students' beautiful souls and glowing beauty of educational significance.

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