

室·内·空·间·设·计·系·列



中威图文  
ZHONGWEI

E D U C A T I O N · W E L F A R E  
S P A C E

# 教育 · 福利空间

韩国建筑世界株式会社 编

大连理工大学出版社



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# 教育 · 福利空间

## EDUCATION · WELFARE SPACE

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孔 磊 译

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## 教育场所室内设计过程

### Interior Design Process for Education Space

金进洙/开放空间设计合作有限公司执行总裁

Kim, Jin Su / CEO of Open Space Co.,Ltd.

金进洙曾在 Hongik 大学学习建筑工程学，获得了该大学环境研究生院的硕士学位。他还获得了 Dankook 大学经济管理研究生院的硕士学位，同时修完了 Kyunghee 大学的建筑设计与规划的博士生课程。

此后，金进洙受雇于 Kim Sugeun 建筑事务所(空间团体)。作为一名 Kyung Hyang 住房展示会的授权设计师、1997 年和 2000 年韩国建筑展览会的特邀嘉宾、1999 建筑文化年(韩国建筑百年)的签约艺术家，他表现出了非凡的活动才能。

此外，他曾以教授的身份任职于 Sangji 大学，Shingu 学院，Sungshin 女子大学，Hansung 大学，Kookmim 大学，Hongik 大学社会教育学院以及 Bucheon 学院。他至今依然是 Hyupsung 大学室内设计专业和 Konkuk 大学研究生院设计专业的教授。

He studied architectural engineering at Hongik University and received his masters at Environmental Graduate School of the same university. He also received masters at Graduate School of Business Administration of Dankook University and finished doctor of architectural planning & design course in Kyunghee University.

After that he worked for Kim Sugeun architectural office(Space Group). And he has shown a lot of activities as an authorized architect of Kyung Hyang Housing Fair, an invited artist of Korean Architecture Exhibition of '97 and 2000 year, an invited artist of '99 Architecture Culture Year(Korean Architecture for 100 years).

Besides, he was a Prof. of Sangji University, Shingu College, Sungshin Women's University, Hansung University, Kookmin University, and Institute for Social Education of Hongik University, Bucheon College. He is now a Prof. of Interior Architecture at Hyupsung University, Design Graduate School of Konkuk University.

韩国的学校建筑一直按照从 20 世纪 60 年代的帐篷式教室和临时性建筑到 20 世纪 70 年代统一的长走廊加一串教室这样的标准进行设计和建造的。然而这样的学校环境长期以来一直与以课本教学为主的单一的学生培训体系一道成了阻碍教育发展的桎梏。从 20 世纪 80 年代开始,教学场所发生了巨大的变化,多种多样的探索活动参与解决那些过去存在的问题。根据为适应初级学校开放式教学和中等学校多变性水平教学体系而制定的第七项教育改革措施,教学场所的空间结构以及教学活动都在进行着相应的改变,而这种改变可以被认为是一种教育观念的变化,即在摒弃过去那种单一的教育模式的同时,为当代社会培养所需要的那种既能自主思维又可自由发挥的人才。

伴随着终身教育意识的提高和教学设施综合化的趋势,这种变化了的学校将被视为传授区域文化的基础设施。遵循教育场所观念更新的原则,以及充分考虑使用者的状况,其室内设计应该创造出一种奋发向上的学习氛围来达到最理想的效果。

教育场所可划分为教学设施和大型图书馆两大类,其中教学设施还可根据其教育对象和教学目的再次进行细致的划分。通过这种将教育场所区分为学校、幼儿园和图书馆的方法,可以确认其设计条款所应涉及的必然是功能、空间规划、设计要素以及环境技术等问题。

The Korean school building has been designed according to the school design standard from the tent classroom and temporary building in the 1960's to the uniform space constitution consisting of the long corridor and classrooms in the 1970's. Such school environment has been pointed out as a problem together with the uniform student training system with the textbook-oriented lecture atmosphere. Since the 1980's, the education space has been changing a lot, and various research activities have been conducted to solve the past problems. According to the seventh education reform identified with the open learning for the elementary school and the mobile learning system by level for the middle education institute, the space constitution and learning activities are changing, which can be described as a way of education ideology to cultivate an autonomous and free person required by the modern society giving up the uniform educational method.

With the increased meaning of a life-long education and tendency of the school facility complex, the school is going to be regarded as an essential facility for the local culture. In compliance with the increased meaning of education space, the interior design should create an educational environment to operate the optimal functions taking the situation of users into account.

The education space can be classified into the school facility and library in large, and the school facility can be broken down again according to its object and purpose. This article deals with the functions, space planning, design elements, and environmental technological problems by classifying the education space into the school, kindergarten and library.



## 1. 学校

这里所提及的教学设施提供了一种宽松的气氛和一个安逸的环境，且极富文化色彩，同时也是从事教学与研究活动的基础设施，以便使其能够成为一个学校全体人员共同拥有的、充满活力的场所。

根据管理方式，学校可分为普通型、普通变更型、变更型、三部制型和开放型。而依据排列方式还可被分为单边走廊型、双边负载走廊型、空架型、厅堂型和敞开布局型。

### 1) 学校规划的范围

#### 1. 教室规划

教室就是这样一种设施，它须使一间  $65\text{ m}^2$  的房间里足以容纳 40~45 人。就这种环境的规划而言，重要的是要了解有形的因素和室内环境，例如视听效果。另外，还应考虑到诸如自然光调整、照明设计、色彩搭配、噪音预防、音响设计、通风装置、空气状况以及采暖措施等室内因素。

#### 2. 高年级学生与低年级学生之间的分隔

考虑到学生之间存在的差别，即使他们是同一所小学或同一所中学的学生，低年级教室也应与高年级教室分隔开来，如此可使全体学生都能享有最佳的学习环境。较为理想的是能够将厕所和盥洗室安排在靠近教室的地方，从而形成一个较为独立的活动区域。同年級的教室应安排在相同的环境里，这样可使每个年级的活动范围不至于混乱。由于中小学的高年级学生往往喜欢到特殊教室去，因此与特殊教室相关的情况应考虑在内。

## 1. School

The school facility provides with a relaxation, leisure and cultural facility as well as a basic facility for education and research activity in order to become a living ground for all members of school. In particular, the space planning should classify such facilities properly so that each part can be balanced distributed.

The school can be classified into the usual type(U-style), usual with variation(U.V-style), variation type(V-style), platoon type(P-style), and open school according to its management style. It can be classified into the side-corridor type, double loaded-corridor type, batterie type, hall type, and open plan type according to its arrangement style.

### 1) Direction of School Planning

#### 1. Classroom planning

The classroom is a facility with high density accommodating 40-45 persons in a room of  $65\text{ m}^2$ . For such environment planning, it is important to understand physical elements and interior climate such as sight and listening environment. In addition, it should consider the interior climate such as sunshine adjustment, lighting design, color, noise prevention, sound design, ventilation, air conditioning and heating.

#### 2. Separation of students of the higher grades and the lower grades

Considering that there is a difference between students even though they are same elementary or middle school students, the classrooms of the lower grades should be separated from that of the higher grades to offer the best

### 3. 与特殊教室的衔接

由于每个班级都使用特殊教室，因此应将其设计得便于学习活动。考虑到与其他教室之间的内在关系，在设计安排上应有一个整体性的规划。对于小学校而言，特殊教室的设计安排还应注意年级的差别和噪音的干扰。

### 4. 学校与社区的关系

长期以来，由于学校一直被视为社区的设施之一，因此学校设计应符合社区及其自身的要求。最近以来，由于居民的终身教育以及运动休闲和文化活动的需要，学校已被当成一种公共设施。基于这样的原因，应对学校的建设单独做出规划，以避免学生的学习生活受到干扰。此外，为了提高学校的利用率，可将居民们近似连续性的使用与学生们的正常使用在时间上区分开来。

## 2) 空间结构与设计

### 1. 普通教室的设计

小学教室通常采用方形平面，因为对每一个群体和班级而言，都需要有多种多样的学习方式。而中学教室则采用长方形平面，因为无论在普通教室还是在特殊教室都采用讲授式的教学方法。教室的大小可根据桌椅的尺寸和排列形式而定。

conditions to students. It is ideal to arrange the toilet and washroom near to the classroom so as to shape an independent living bloc. The classrooms for the same grades should be arranged in the same condition so that the activity range of each grade are not confused. Since the students of higher grades of elementary and middle school have tendency to move to the special classrooms frequently, the connection with the special classrooms should be considered as well.

### 3. Connection with each special classroom

Since every class uses the special classroom, it should be arranged for an easy learning activity for every class. Taking the relevance with other classrooms into account, it should be arranged with an organic connection planning. For the elementary school, the special classroom should take the grades and noise into account.

### 4. Relationship of school and community

As long as the school is regarded as one of the community facilities, the school should be planned to satisfy with the requirements of the community as well as the school itself. The school is recently regarded as a public facility for the lifelong education of residents and sports and cultural facility. In this case it should be separately planned so as not to obstruct the learning activities of students. Moreover, the approach circulation of residents should be separated from that of students for an effective use of school.

## 2) Space Constitution & Planning

### 1. Common classroom planning

For the type of elementary school classrooms, the classroom of a square type is adopted because it needs

小学教室窗台的标准高度应在600~700mm,中学则为750mm,并且为了安全起见应在二楼安装扶手。教室的天棚高度应为3000mm或者更高一些,而其他生活房间则为2100mm或再高一点。每只灯的照明范围应为教室地板面积的十分之一或再大一些。为残疾人使用的特殊教室应是一个灵活易变的大型空间,以满足学习以及其他方面的需要。在设计围绕教室而安装的设施时,还应充分考虑到学生的身高、安全性能以及是否耐用。安全通道同样应被规划在内,以备疏散之需。

## 2. 特殊教室的设计

——实验室:实验室应设计得既舒适又有较高的利用率,以便适合实验、授课、讨论以及集体活动。应装配电气设备、可燃气体和管道系统,但应注意避免煤气、酸性和碱性物质影响到其他教室。

——音乐室:对于音乐而言,实践远比理论更为重要,因此音乐室的设计应充分考虑到乐器练习、演奏、唱歌以及乐曲欣赏等因素。通过设计地面上的地毯和棚顶的隔音材料使该房间具有鲜明的艺术氛围。

——艺术室:关于艺术室的设计,照明效果是一个重要的环节。应按照双边等亮度阳光照射原则进行设计。小学艺术室的噪音往往比较大,因此在设计上应充分考虑到避免使其他教室受到干扰,并通过使用隔板材料使其具有吸音、隔音的功效。

——工艺室:所谓工艺室,是指那些可以用于家务、平面制图、木制工艺品、金属加工、服装制造和烹调等项活动的房间。考虑到这些工作的精密性质,其照明强度应保持在一个较高的水平上。这种房间的装饰应采用隔音、绝缘和耐火材料。地面材料应具有较强的抗破损性能,并能防止粉尘附着。由于粉尘、废料以及有害气体等原因,通风效果良好是非常重要的。

various learning styles for each group and class. The middle school adopts the classroom of a rectangle type because a lecture-style learning method is introduced in the classrooms and special classrooms. The size of a classroom is decided by the size of desk and chair and their arrangement style.

The proper height of a window reaches 600~700mm for the elementary school and 750mm for the middle school. It is desirable to install a handle for security on the second floor. The height of the ceiling should be 3000mm or more for the classroom and 2100mm or more for other living rooms. The size of lighting should be 1/10 or more compared to the size of the floor of classroom. The special classroom for the disabled should be a flexible big space to secure their learning and living activity. The facilities to be installed around the classroom should be designed taking the different height of students, security and durability into account. An exit should be established to prepare for the case of evacuation.

## 2. Planning of a special classroom

- Laboratory: It should be designed comfortably and efficiently for the experiment, lecture, discussion and group activities. It should be equipped with electric, gas and plumbing system, and the occurrence of steam such as poisonous gas, acid and alkali should not disturb other classrooms.

- Music room: Since the practice is more important than the theory for music, the music room is designed for exercise of music instrument, play, singing and listening of music. This room should be designed with a bright atmosphere with a carpet for the floor and soundproof materials for the ceiling.

- Art room: For the art room design, the lighting is an important element. It should be designed as a bilateral daylighting with an equal luminous intensity. Since the art room of elementary school is noisy, it should be



——视听室：这种房间并非独立的学习场所，而是一种配有多种设施的、以提高学习效率为目的的辅助性教室。在这种房间中使用的都是录音资料、听力资料和录像资料，因此结构安排和材料选用都要根据语音的特征而定。此处电力系统应妥善设置，以确保其对电力能源的需求。

——语音室：语音室要求具有标准的语音条件，以免学生进行语言练习时受到噪音的干扰。

### 3. 图书馆

图书馆应布置在安静的地方，要求舒适而明亮，并与视听室或音乐室相连接。可采用双面书架的开放形式。阅读室应在能够容纳整个班级的同时，至少空出20个座位。低年级学生过于吵闹，因此应将他们所需的书籍尽量放置在安全出口或管理处附近。在图书馆中为成年人或团体设立小型房间也是非常合理的。

### 4. 管理室

——办公性房间：在此范畴中，应该包括校长室、教师室、休息室、办公室、值班室、印刷室和储藏室。为校长室配备一间带有起居室的会客室是很有必要的，因为作为一校之长要经常会见外来人员。把教师室从休息区分离出去不失为一个好主意，这样可以使教师能够在安静的环境中备课。

situated considering other classrooms, sound absorption, soundproof planning using partitions.

- Technique-related rooms: The rooms for household activity, plan drawing, woodwork, metal processing, clothing production, and cook should secure an sufficient luminous intensity taking the precise work into account. The finishing materials for this room should be of sound absorption, insulation and fire-resistance. The floor should be strong against damage and dust. The ventilation is important for this room as well because of dust, wastes and smell.

- A/V room: This room is not an independent learning area but an auxiliary room for an effective learning activity as a common room with various facilities. Since the recorded teaching materials, listening materials and A/V materials are used in this room, the structure and materials for this room should be decided according to the sound characteristics. The hydroelectricity should be arranged to gain necessary electricity.

- Language room: It requires proper sound conditions so that the students practice language without any noise.

### 3. Library

The library should be designed as a comfortable and bright space connected with A/V room or music room in an available and quiet place. The free open stack system is adopted for the library and the reading room should have capacity to accommodate the whole class with extra 20 seats. The books for the lower grades should be arranged near to the exit or management room because they are noisy. It is desirable to establish small rooms for people or groups in the library.

### 4. Management room

- Office-related rooms: There are schoolmaster's room, teacher's room, resting room, office, night duty room,

——医务室：由于医务室是为治疗疾病、放松身体、健康检查、身体测量等目的而设立的，因此它应该是经过消毒的、清洁而舒适的地方。小学校的医务室适合设在距教师办公室较近的安静之处。另外，理想的医务室位置应该是救护车容易靠近的地方，因为意外事件随时有可能发生。这种房间应使用帘子或橱柜做隔断，效果远胜于固定墙壁。

——播音室：播音室的设计首先要考虑的是与外部声音的隔离，以及处理好室内回响和照明。该房间不必设计窗户。标准音高应为 35 分贝。

#### 5. 其他相关房间

——配餐室：配餐室需要具备良好的照明效果和通风设施。其内部装饰材料应当注意防火、耐用和清洁，地面则应保持 1/50 或更大些的倾斜度。配餐室还应拥有便捷的运输通道，并且注意与学生通道分隔开来。

——盥洗室：盥洗室应男女分开设置，它与每间教室的距离应在 30 ~ 50 米以内。

——门厅和走廊楼梯：由于门厅属于过道的一部分，设计时须注意防止发生混淆现象，并加强隔音效果。走廊则既可作为通道使用，又可当做休息和展览物品的场所。

——喷漆室：它的设置与否取决于学校的管理体系。一般情况下，当它被分配给特殊教室时，往往作为一个或几个特殊教室的主要设施被设置在中心位置，从而使其与教室隔离开来。

#### 6. 体育馆

printing room and warehouse in this category. It is desirable to establish a conference room together with a living room for the schoolmaster's room, because the schoolmaster has many meetings with people. It is a good idea to separate the teacher's room from the resting area for teachers so that they prepare for lectures in a quiet atmosphere.

- Nursing room: Since this room is for treatment, relaxation, health counseling, body measurement, it should be a clean and comfortable place for disinfection. For the elementary school, it is desirable to arrange this room near to the teacher's room in a quiet place. In addition, the ideal location of this room is a place where an ambulance can approach easily and accidents of external wound takes place frequently. The room should be intercepted by a curtain or wardrobe rather than by a fixed wall.

- Broadcasting studio: It should be designed to isolate the external sound and to deal with reverberation and lighting inside. No window is necessary. The proper sound absorption is 35dB.

#### 5. Other related rooms

- Feeding facility: It needs a good lighting and ventilation system. The interior finishing materials should be fireproof, durable and clear, and the slope of the floor should be 1/50 or more. It should be located in a place where a good traffic approach is provided. The circulation of traffic should be separated from that of students.

- Toilette: The toilette should be established for men and women separately. It should be located within 30-50m from each classroom.

- Entrance & corridor stairs: Since the entrance is a part of passage, it should be designed to prevent confusion and noise. The corridor can be used as a passage, resting place and exhibition space.

### 3) 人体测量与规划

安置于教室中的用具和设施要充分考虑到作为主要使用者的学生的身材这一因素。

### 4) 桌椅规划

桌椅的大小可根据学生的不同身材和发育速度灵活地掌握，而桌椅的设计则应在标准的尺寸范围内进行调整。不应考虑那些沉重而又不匀称的桌椅，取而代之的应是由学生自己随意挪动的轻型桌椅，而且通过随意性地排列桌椅创造出一个富有弹性的空间。良好的设施可以使学生在各种形式的活动中提高他们的创造能力。因此，有关设施的设计应充分考虑到功能特点和美学外观，营造出一个美丽的空间，并借此激发学生们的兴趣和参与其中的欲望。

### 5) 色彩规划

设计方案中应对色彩规划有一个整体的印象。包括材料、照明以及细部结构在内的具体色彩规划应为整体设计提供预案。教室里的色彩合适与否应以作为学校主人的学生是否喜爱为标准。所谓色彩规划，其实就是选择那些在学生的学习过程中能吸引其注意力的色彩组合。

- Lacquer room: It depends on the management system of school. While it is attached to the special classrooms in general, it can be arranged as a central facility in a place or several places around the circulation by separating from the classroom.

6. An indoor gymnasium.

### 3) Measurement & Planning of Human Body

The furniture or facilities to be installed in the classroom should take the size of students who are the major users of school into account.

### 4) Furniture Planning

The size of furniture is flexibly decided according to the growth rate and different body sizes of children, and the design of furniture and facilities should be adjusted within the standard measurement range. Not the heavy and unbalanced furniture but the light furniture that can be easily moved by children should be arranged, and it should establish a flexible space through a free arrangement of furniture. The good facilities are to stimulate development of creative ability of children by applying for various activities. Therefore the facilities are designed for a beautiful space considering the functional aspect and aesthetical aspect to promote the active participation and interest of children.



## 6) 室内环境规划

1. 照明: 应以自然光为主, 人工照明则只用做辅助照明。标准的光线强度应为 300 勒克斯, 而双面自然光照明最适于这一标准。教室中的照明应保持均匀, 以便确保学生能在良好的照明条件下进行学习。

2. 音质: 可采用具有较强吸音性的地面装饰材料, 以减轻和消除噪声干扰。对教室而言, 可通过对声波反射时间的调整促使声音的清晰度达到 90% 或者更高, 以确保学生的注意力始终处于良好的状态之中。

3. 供暖: 供暖系统正从单独供暖向中央供暖系统转变。既然是中央供暖系统, 则必然要求对设备室和管网做出相应的规划。另外, 还有一种嵌入式发热板供暖装置, 这种装置可使管网隐藏于地板、天花板或墙壁中进行散热。

4. 管道 (设备): 最经济的方法就是将厕所、盥洗室、配餐室以及特殊房间等集中设在彼此临近的地方。

5. 灭火设施: 此项规划包括灭火器、非专业临时灭火人员和室内消防栓。

6. 气流: 逆风时, 里面窗户的开启程度应为  $1/3$  或者更大一些, 而在顺风时, 则应使窗户的下半部分开得尽量低一些。因为这种状态可使窗户开得大一些。此外, 还要有水平轴的窗户和横向气窗, 以便使空气的流动与学生的呼吸位置相吻合。当窗户关闭时, 应使用安装于墙壁上的通风设施, 其频率为每小时一次。

## 5) Color Planning

The design should have an image of color planning. The detailed color planning including materials, lighting and detailed constitution should be prepared for the design. The proper color for classroom is a color complying with the tastes of students who are the user of school. The color planning is to choose the color suitable for attracting attention of students for learning activities.

## 6) Interior Environment Planning

1. Lighting: The nature lighting is mainly used with the artificial lighting as an auxiliary lighting. The proper luminous intensity is 300lx and the bilateral daylighting is an ideal lighting for it. The classroom should be equally bright so that the students perform all learning activities in a good condition.

2. Sound: It adopts the floor finishing materials with the improved sound absorption ability to relieve and reduce noise. For the classroom, the clearness of sound should maintain 90% or more by adjusting the reverberation time for the good attention of students.

3. Heating: The heating system is changing from the individual heating system to the central heating system. For the central heating system, the machine room and piping planning is required. In addition, there is a panel heating system to bury the pipe for heating in the floor, ceiling or wall.

4. Plumbing: It is economical to centralize the toilette, washstand, feeding room and special room in a near place.

5. Fire extinguishing facility: It plans a fire extinguisher, temporary fire extinguisher and indoor hydrant facility.

6. Climate: The opening size in opposite to the wind direction should be  $1/3$  or more for the inside, and the

## 2. 幼儿园

婴幼儿期是人类成长的最基本的时期。由于这一时期的体验和感受将会对少年时期的发展和成长产生关键性的影响，因此可以说它是非常重要的时期。对孩子们的游戏与学习设施的规划应给予充分细致的关注。这里最重要的是，幼儿园设施的规划应优先考虑到孩子们的需要以及他们的人身安全。至于空间构成要素亦应对孩子的身心发展有所裨益。

### 1) 内部空间的构成

汉城教育促进会根据适合在教室进行的学习方式提出了如下活动建议。

区域 1: 与水无关的静态活动——阅读活动，操作游戏

区域 2: 与水无关的动态活动——音乐和有节奏的活动，木工活，积木游戏

区域 3: 与水有关的静态活动——劳动游戏，技巧游戏，沙子游戏

区域 4: 与水有关的动态活动——水上游戏，游乐室

### 1. 学习与游戏空间

学习与游戏空间是最重要的场所，也是设计方案中的基础部分，因为孩子们的活动几乎都是在这里进行的。教室的理想朝向应是面南或面东。教室天花板的理想高度应为 3 ~ 3.5 m，不过不同高度的天花板会引起孩子们的好奇心。可移动的墙壁能使空间形态变得更为灵活和多样化，效果远胜于固定式墙壁。可通过使用隔音材料来降低噪音的干扰。

below part of window for the wind direction should be as low as possible. It is desirable to make the opening big in this case. The horizontal pivoted window and horizontal louver is required so that the air stream agrees with the breathing position of students. The frequency of natural ventilation is one time per hour in the reinforced concrete when the window is closed.

## 2. Kindergarten

The period of infant is the most basic phase in the human development. It is very important period because the experiences of this period can exert critical influences on the development and growth of children in the future. Therefore the interior design of kindergarten requires a careful attention for the planning of children's play and learning facility as an early learning environment. Above all, the infant facility should give priority to the children and their security, and the space constitution elements should be helpful for their development.

### 1) Constitution of Interior Space

Seoul Education Committee suggests the following activities according to the learning style conducted in the classrooms.

-Area 1: A static activity without using water - Reading activity, operational play

-Area 2: A dynamic activity without using water - Music and rhythmical activity, woodwork, block play

-Area 3: A static activity with using water - Work play, science play, sand play

-Area 4: A dynamic activity with using water - Water play, playing house

### 1. Learning & play space

## 2. 观察室

家长和教师可在此观察并记录孩子们的学习活动。

## 3. 办公室

教师们可在此休息、制作学习材料以及召开会议。最好将办公室设在孩子们容易看到的地方。

## 4. 医务室

医务室应是一间明亮、安静并且气氛融洽的房间，孩子们可以轻松随便地来到这里做身体检查，相关数据将被妥善保管起来。

## 5. 配餐设施

根据年龄确定配餐设施是较为可取的。需注意的是应保持卫生和通风顺畅。

## 6. 仓库

有关物品和其他设备按各自用途在此分类存放。

## 2) 装饰材料

### 1. 地面

考虑到孩子们的活动特点，应选择使用易清洁、柔软和安全的地面材料。适于儿童活动的耐用材料也应在选择范围内，而那些坚硬、易打滑的材料应避免使用。

### 2. 墙壁

可选择易用水清洗的、抗磨损的材料。

### 3. 天花板

可选择使用吸音材料，以降低噪音。

It is the most important space and essential part of design because the children's activities mostly take place in this space. The ideal direction of classroom is the south or east. The ideal height of ceiling of classroom is 3~3.5m but the different height of ceiling can attract interest of children. The variable wall is desirable to give flexibility and variety to the space rather than the fixed wall. It uses sound absorption materials to reduce noise.

2. Observation room: The parents and teachers can observe and record the learning activities of the children.

3. Office: It is a place where teachers can relax, produce learning materials and hold meetings. It is desirable to locate the office in a place where the children can be easily observed.

4. Nursing room: It should be a clean room with a bright, quiet and intimate atmosphere where the children can visit easily and data for health control can be well preserved.

5. Feeding facility: It is desirable to establish the feeding facility according to age. It should consider cleanness and ventilation sufficiently.

6. Warehouse: It is a place where materials and other equipment are classified and arranged according to their purpose.

## 2) Finishing Materials

1. Floor: It should select the clean, flexible and safe floor materials for an easy cleaning and little noise taking the activity style of children into account. The durable materials for children's activity should be selected. The hard and slippery materials should be avoided.

2. Wall: For the wall, it should select the abrasion resistance materials that can be well cleaned with water.



### 3) 色彩规划

有关色彩规划, 可选用原色或高纯度的色彩作为特征, 以便引起孩子们的兴趣。最好使用少量事先设计好的形象色彩, 较理想的形式是选用卡通形象或孩子们喜欢的图案。墙壁亮度应足以反射 50% 的光线。地面的颜色应与墙壁有所区别。考虑到反射效果, 天花板应使用与墙壁相同的明亮颜色。

### 4) 家具规划

家具的设计要充分考虑到孩子们的身材大小、体型特征和安全因素, 还应考虑色彩的选择和孩子们的成长因素。此外, 还要设计得轻便灵巧, 以便于搬移和安置。

### 5) 室内环境设计

#### 1. 照明

应确保获取充足的自然光线。白天时, 教室的照明应完全借助于自然光。而光线的使用效率可以通过调整墙壁的颜色来获得提高。光线调整装置是被用来调节直射光线强度的, 因此局部的明亮差别是可以得到解决的。正是通过这些可调整的照明装置, 才使得照明强度的分配保持在一个良好的平衡状态上。

#### 2. 通风

为了孩子们的卫生与健康, 幼儿园的室内应始终保持清洁而新鲜的空气。如果自然通风状态达不到清洁空气的标准, 便需要安装通风设备进行补充。最可取的办法是在规划阶段便将其设计在内, 以备冬季之需。

3. Ceiling: It selects materials for sound absorption to reduce noise.

### 3) Color Planning

For the color planning, the primary colors or colors with high chroma are used as an accent to attract interest of children. It is better to use few colors with an intended image. It is a good idea to use cartoon and design beloved by the children. The wall should be so bright as to reflect light of 50% and the floor should have different color from that of the wall. For the ceiling it is desirable to use a clear light color of the same color category as the wall considering reflection.

### 4) Furniture Planning

Furniture should be designed considering the size of children, their physical characteristics and security. It should consider colors and formative elements, and the furniture should be light for an easy movement and arrangement.

### 5) Interior Environment Planning

#### 1. Lighting

The natural lighting should be sufficiently secured. The classroom should be bright through the natural lighting only in daytime, and the lighting efficiency can be enhanced by adjusting the color of wall. But the adjustment equipment is required to adjust the intensity of direct ray of light. In this case the difference of brightness