

CAMPUS LANDSCAPE

PLANNING & DESIGN

校区绿化与景观设计

(德) 米歇尔·黑尔兹 编
常文心 译

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PREFACE

前言

Culture and Modern Campus Landscape

The book takes a look at a subject area of public life which will become more and more important in the future: education. The prospective development of our societies will in future primarily be determined by the quality of culture and education.

How do we as planners deal responsibly with such a task? Which basic attitude regarding the public space and which understanding of the human being appear in spatial concepts? Which interactions emerge between spatial structure and the learning contents? How much do spatial structures at learning sites of all kinds define the understanding between individuals and society?

Fully astonished, we currently observe a globalisation of education: the international orientation of universities and schools, discussions across national borders on different educational and learning concepts. This development is not new; however, new is the range of this development and its (commonplace) penetration depth within the public life sector. In so far, the range of projects shown in this book is only coherent: across continents the presented projects come from Asia, America and Europe.

The following projects mirror a cross-section of all facets of different educational institutions: universities, secondary schools, primary and vocational schools, as well as schools for handicapped people. All sites have one thing in common: these institutions opened up for new ideas and concepts. The times in which structure and learning contents were determined by self-centredness are over. Instead openness and curiosity for learning determine the self-image of new generations. This does not only happen on the level of learning contents, it is also mirrored in the built structures. Which site could represent this new self-image better than the campus – the spatial and creative centre of the presented educational institutions.

The campus serves as a place of exchange of different cultures, ideas and working practices. However, it also acts as a kind of magnifying glass, transporting the self-confidence of the institutions via spatial structures.

The tasks which have to be fulfilled by the planning are diverse and complex: this includes questions of organising spatial structures and their flexibility with regard

文化与现代校园景观

本书展现的是公共生活中将在未来变得日益重要的主题：教育。人类社会在未来的发展将首先由教育和职业培训的质量确定。

面对这样的任务，我们作为规划师应该如何有意识地应对？公共空间应该有什么样的基本形态？对空间的概念规划反映出怎样的对人的理解？空间结构和教育的内容之间存在怎样的相互作用？不同的教育形式构成的空间结构如何深刻影响到个人与群体的相互理解？

目前，我们可以观察到的是令人激动的教育全球化的景象：大学和中学的国际化进程，多种教育和学习概念的跨国界的讨论。这样的发展进程并不新鲜，新鲜的是发展的广泛程度及其对日常公共生活的深刻影响。在本书中展示的一系列项目因而是对这一发展的合乎逻辑的回应，这些跨越洲际的项目来自亚洲、美洲和欧洲。

本书的项目展示的是来自不同教育机构的各个侧面，这些教育机构包括：大学、中学、小学、职业培训学校以及残疾人学校。它们的共同点在于教育机构的开放以寻求新的观念和发展纲领。由自我为中心确定结构和学习内容的时代已然过去，新一代学生的自我认知和学习动力建立在坦率开放的心态和对新知识的好奇之上。这种改变不仅仅表现在学习内容上，还表现在物质环境上的变化。除了在校园——教育机构的空间上和创造力上的中心——还有哪里更能体现这种自我认知上的改变呢？校园是各式各样文化、观念和实践的交换场所。校园同时也是将教育机构的自我认知映射到空间结构上的一面透镜。

对于校园规划提出的任务是多样而综合的：要组织空间结构以及从适应教育的需求和内容出发，维持空间的可塑性；需要将最新的技术与现代教育、研究机构的需求融合；对于自然资源的处理和利用要有时代特征和负责任的态度，要合理利用传统和现代的材料。所有这些任务却都围绕着一个规划的中心思

to changed educational needs and contents; they integrate the state of the art of technology and the needs of modern educational and research institutions; they show a temporary and responsible use of natural resources and give an overview on the use of traditional and modern materials. However, a major thread of planning philosophy is visible in all these tasks: facilitating the highest possible level in self-determined learning.

The book displays modern examples of generating architectural and landscape qualities of the site and their interactions. Today, the consequent integration of architectural and landscape architectural concepts to form a coherent whole determines the quality of planning for different needs and in different yardsticks. From the complete concept to the details, here the usability for future users and the adaptability to future developments, which we are not yet able to see, are manifested. For us planners, the creation of significant spatial structures and their interpretation ability still poses one of the largest challenges.

As already described at the beginning, we notice an opening of traditional educational institutions as universities and different school establishments. This not only happens on the level of the educational institutions themselves – they increasingly influence the development of complete cities and districts. With them opening up, educational institutions become a component in the city. They substantially influence the development of the surrounding area – as regards living, commerce, services and/or trade.

Within the network of the city's public spaces, the modern campus turns into an attractive address with effect. It not only incorporates the claim to a modern city and educational landscape, but also integrates different cultures and life designs.

With designing new campus landscapes educational establishments of all kinds receive a distinct profile. They are (apart from some other factors) important components of building an identity, which shines far beyond the institution: they become a catalyst of modern urban and landscape development in the 21st century.

Michael Herz
20th November 2012

想：为实现自定目标的学习提供尽可能多的物质条件。

本书的案例展示了现代建筑与景观如何共同作用提升场地的品质。建筑概念与景观概念在逻辑上的衔接构成的一个相互依存的整体确定了当代适应不同需求以及在不同尺度下规划的质量。从整体概念直到每个细节都体现出对未来使用者的适用性，以及适应未来发展变化的空间，尽管未来的发展以今日的我们尚无法预见。对特征明显的空间结构及其表现能力的规划将仍然是设计师面临的巨大挑战。

如上所述，我们正面对着传统封闭教育机构如大学和众多学校的开放过程。但这不仅仅只发生在教育机构本身，在社区甚至整个城市的层面上它也正在产生越来越大的影响力。其影响力表现在对周边环境的示范作用，包括居住区、商业区、服务区和手工业区。

现代化的校园在城市开放空间的网络中正在慢慢转变为具有吸引力的辐射源。它不仅代表着对于现代化城市和教育景观的追求，同时也融合了不同的文化和对生活的规划。

伴随着新设计的校园景观，各类教学机构获得了其不会被误读的特征。它们是构成形象辨识的重要基石，而这个形象也正在超越教育机构本身散发其影响力：它们将是21世纪城市和景观发展的催化器。

米歇尔·黑尔兹
2012年11月20日

Figure1 The new buildings, parking lot and outdoor activity spaces are integrated, which helps to establish a friendly relationship between the buildings and the environment as well as create leisure and communication spaces for students.

Figure2 The Perry School site was an empty expanse of pavement with parking extending through the schoolyard, a desert programmatically and environmentally. Through a consensus based community process with the school, neighbourhood, Boston Schoolyard Initiative and City of Boston, the landscape architect David Warner designed the Boston Harbour Island themed schoolyard and outdoor classroom richly detailed with maritime influences.

Figure3 Courses at outdoor classrooms

图1 西北维斯塔学院的校园规划设计将新建筑、停车场与学生户外活动场地融合在一起，既衔接了建筑与周围环境的友好关系，又创造了学生休闲和交流的场地

图2 佩里学校设在一片宽广的带有停车场的路面上，场地具有典型的沙漠特征。学校、社区、波士顿学校运动场联盟和波士顿市政府达成了共识，景观设计师设计了波士顿港岛主题运动场和深受海洋影响的露天教室

图3 老师把课程安排在露天教室



CHAPTER ONE: INTRODUCTION

1.1 Meaning and trend of campus landscape design

Campus planning and landscape design offer opportunity to realize transformational change, promote distinctive, welcoming and sustainable places in which to learn and live. External environments can form the focus of campus communities, providing spaces and places for social interaction, rest and relaxation, recreation, exchange of ideas and support a strong sense of ownership and belonging. (Figure 1)

Current trend in campus design emphasize is integrating school planners, local planning and zoning departments, transportation (vehicular and pedestrian), public works and parks departments in the planning process to create an integrated and cooperative process.

1.2 Characteristics

1.2.1 A high-quality schoolyard is multi-use and multi-task.

The campus is suitable for innovative learning and creative-play activities as well as traditional recreation. The site is also open to community and out-of school programmes allowing for highest use and offering benefits to the greatest number of people possible.

The site design and procedures are flexible and adaptable to changing and evolving usage.

1.2.2 A high-quality campus begins with an inclusive design process.

A high-quality campus facilitates and encourages developmentally appropriate play and learning activities through its design, which means that experts on principles of cognitive development and age-appropriate play work with architects in the design phase. (Figure 2)

第一章 设计概述

1.1 校园景观规划设计的意义和发展趋势

校园规划和景观设计为学校进行根本性变革提供良机，令学生可以在更为独特、友好又可可持续的地方学习和生活。外部环境能够发展成为校园生活的中心，为学生们的互动、休息休闲、娱乐消遣以及交换思想意见提供场地，有利于培养学生们的主人翁意识和强烈的归属感。（图1）

当前校园景观设计的发展趋势越来越重视各方意见，在设计 and 规划的过程中，与规划师、当地规划和区划部门、交通部门、公共工程以及公园管理部门亲密合作。

1.2 特征

1.2.1 高质量的校园景观设计应集多功能性和多任务性于一身

校园既是学生们创新型学习和游戏的地方，也是他们进行消遣娱乐活动的场地。此外，校园还对社会大众和校外项目开放，以追求高效的利用率，尽可能为更多人造福。

校园景观设计及其相关程序灵活多变，能够适应各种变化，还可以对其的功能进行扩充。

1.2.2 高质量的校园景观始于其完善的设计过程

一个高质量的校园可以通过其景观设计促进并鼓励“适当的游戏和学习活动”的发展，这就意味着，设计团队应在设计阶段就邀请研究认知发展和适龄游戏的专家参与其中，为景观设计提供宝贵的意见（图2）。



Furthermore, the design phase also emphasizes community participation, allowing the broadest possible range of potential users to give input. Through this process, the design responds to local needs and creates a sense of local ownership of the campus.

1.2.3 A high-quality campus fosters partnership with community organizations.

Strong reciprocal relationships between schools and other community organizations form around high-quality campuses. By sharing the site, schools provide a valuable resource to community organizations and at the same time, schools benefit from the resources and expertise of partner organizations. A participatory planning stage can initiate the development of these partnerships even before the physical site exists, which enhances the utility and long-term sustainability of the campus.

1.2.4 A high-quality campus is integrated into the educational planning process.

High-quality campuses are an integrated part of the school's learning curriculum, and serve as the site for teaching of traditional disciplines as well as interdisciplinary activities.

The school [policy] environment enables the integration of indoor and outdoor activities by allowing teachers the flexibility of scheduling, planning and assessment they need to take an innovative approach to teaching in the campus. (Figure 3)

1.2.5 High-quality campus fosters continuity of use.

By encouraging broad participation in the planning and design process, by fostering high levels of use by a range of community organizations and by integrating learning activities into the curriculum, high-quality campus creates a 'culture of use' that ensures the continuity of activities and benefits from year to year.

1.2.6 High-quality campus demonstrate sustainability.

High-quality schoolyards engage in environmentally friendly practices to ensure the longevity of the built and the natural environment. Maintenance of the physical site is considered from the beginning, starting in the planning and design stage, and is treated as an ongoing process – not a one-time investment.

此外，应在设计阶段强调“社区参与”，让尽可能多的潜在使用者参与其中，提供建议。通过这一过程，校园的设计才能更好地满足当地的需求，提升学校的地位。

1.2.3 高质量的校园景观设计有利于促进学校和社区组织之间的伙伴关系

一个高质量的校园景观应有助于建立学校与其他社区组织之间的互惠关系。通过共享同一场地，学校为社区组织提供了宝贵的资源，与此同时，也能从其他社区组织那里获益。应该在校园还未开始建造的时候就实行参与计划，建立学校与其他社区组织的伙伴关系，提升校园的实用性和可持续性。

1.2.4 高质量的校园景观设计应与教育规划过程相融合

一个高质量的校园景观是学校的学习课程不可或缺的一部分，为教授传统知识、进行跨学科活动提供场地。老师可以灵活地安排课程、制定计划和进行评估，进行创造性教学，将室内活动和室外活动相结合（图3）。

1.2.5 高质量的校园景观设计应确保学校使用上的连续性

一个高质量的校园景观可以通过以下三种方式构建一种“使用文化”：1. 在规划和设计过程中鼓励公众广泛参与。2. 提高校园的使用率。3. 将学习活动融入学校课程。这种“使用文化”能够确保学校能够持续“被使用”，使其利益持久化。

1.2.6 高质量的校园景观设计应体现可持续性

一个高质量的校园景观设计应采取更为环保的措施，确保“建造环境”和“自然环境”都能在很长一段时间内健康运行。应在一开始的规划和设计过程中就考虑到场地的后期维护，把校园的景观设计看成是一个持续的过程而非一次性的投入。



CHAPTER TWO: DESIGN CONCEPT

Well-designed campus helps conserve the environment and foster greater environmental awareness and stewardship. Well-designed campus creates a learning environment that stimulates improved teaching and learning. Well-designed campus reduces the likelihood of injuries and is the site of fewer incidents of crime and vandalism. When crime and vandalism decrease on and near campus, the value of the surrounding property increases. (Figure 4)

The ideal campus is designed to address three areas of activity:

2.1 Recreation and Physical Education

The development of motor skills, physical fitness, the ability to work & play together in groups, and enhanced self-esteem are a few benefits seen from the installation of play structures, physical challenge courses, and properly maintained fields and courts. (Figure 5) Many schools lack adequate gymnasium space and students will expend their energies in the hallways or classrooms if not given a more appropriate outlet. During out-of-school time, facilities should be open to neighbourhood youth and families, local sports leagues, and summer camps.

2.2 Social Development

Well-designed campus not only contribute to the physical development, but also to the psycho-social development of young children, by providing spaces where children can practice new developmentally appropriate behaviour and apply it to new situations, as evidenced by: performance and mastery of developmentally appropriate skills.

Part of learning and growing up involves the ability to function in a group setting. In the campus, whether formally or informally, youth have the opportunity to form

第二章 设计理念

一个设计巧妙的校园不仅有利于环境的保护，还有利于增强环保意识和提高环境管理水平。其次，一个设计巧妙的校园能够创造绝佳的学习环境，促进学校教学和学习质量的提升。另外，一个设计巧妙的校园不仅可以降低学生们受伤害的风险，还较少发生犯罪和故意破坏的行为，进而提升当地的地产价值（图4）。

完美的校园设计应具备解决以下三个问题的能力。

2.1 娱乐及体育教育活动

在校园中安装游戏设施，开设身体拓展课程，并对操场和赛场进行妥善维护，能够给校园生活带来诸多益处，其中的一小部分好处包括：培养学生们的运动技能，提升学生们的身体素质，帮助学生养成在群体中学习和游戏的能力，以及建立学生们的自信心等（图5）。许多学校在体育空间方面十分匮乏，由于没有更为合适的出口，学生们只能在走廊或教室里玩耍。放学后或假期里，可以将学校的游戏设施对外开放，为附近的儿童和家庭、当地的体育联盟和暑期夏令营活动所使用。

2.2 社交能力

一个设计巧妙的校园不仅能够促进年轻学生们的身体发育，还有助于他们社会心理的发展。校园让学生们有机会亲身实践那些最新习得的“合适行为”，并在未来的日常生活中将这些“合适行为”付诸于行动。

培养学生们在群组中活动的的能力，是学习生活和成长过



Figure4 The simple, orderly and practical landscape design brings the buildings and their surrounding together, forming a multi-use space for services, education and recreation

Figure5 Playing facilities and sports field

图4 玫瑰圣母公校以简单、有序而实用的方式来解决设计要求，将建筑建造与周边的场地结合起来，汇聚了服务、教育和休闲功能

图5 玫瑰圣母公校的游戏设施和运动场地规划图

5

groups, reach consensus, and develop critical thinking and problem-solving skills with their peers. These interactive skills will aid students as they enter the ‘real world’ where the ability to cooperate with colleagues in the workplace may be more important than remembering the Pythagorean theorem. Although a sad commentary, it is true that many urban youth are not allowed outside their houses or apartments without close adult supervision. Working parents instruct their children to come home from school and lock the doors behind them. Supervised time in the campus may be the only opportunity children have to be outdoors. Expanded access through outdoor classes, after school programmes and summer camps will address this very basic human need. (Figure 6)

2.3 Academic Learning

Well-designed campuses are learning environments that contribute to improved academic learning, by providing a hands-on environment where children can gain learning skills and apply new knowledge and information.

Outdoor, experiential learning is a teaching methodology that can add a new dimension to public education. Any subject that can be taught inside a classroom can be taught as well, and perhaps better, outdoors. For example, many schools are experimenting with planting trees, working on gardens or nature areas. The act of planting and caring for a tree, observing its growth cycles throughout the year, and discussing its niche within the surrounding built or natural ecosystem, is a “learn by doing” activity that can be conducted in most campuses. Compare this with the more traditional practice of pouring through chapters of a text or the more recent practice of sitting before a computer or video monitor. Of course, indoor and outdoor classrooms can, and should, work to compliment each other. Abstract and theoretical notions can often be applied, or put to practical use, in the context of outdoor hands-on class projects. Campus/schoolyard learning activities also lend themselves to a multi-disciplinary approach. A school garden can be an instructional tool for teaching math (measuring & counting), science (environment), literacy

程中不可或缺的一部分。在校园生活中，年轻人总是会有机会形成一些正式或非正式的群组，与他们的同龄人达成一致意见，培养批判性思维和解决问题的能力。在未来的生活中，这些沟通技巧会使学生们受益匪浅，因为将来踏入“现实世界”后，能够与同事建立良好合作关系的能力远比记住勾股定理要更加重要。虽然有些悲哀，但这的确是个事实：当今社会，如果没有成年人监护，很多生活在城市中的青少年是不允许外出的，放学后的学生只能回到家里。因此，学校的时间很有可能是孩子们接触室外的唯一机会。只有增加室外课程、开展课外项目和夏令营活动，才能满足孩子们接触室外这一基本的人类需求。（图6）

2.3 学科教育

一个设计巧妙的校园能够促进学校学科教育的发展，为学生们打造一个可以亲自实践的环境，培养学生们的学习技能，让他们有机会利用和实践最新获取的知识和信息。

室外学习和体验式学习是教学方法的一种，为公共教育提供一个全新视角。任何一个可以在室内进行的学科科目都能在室外进行，有时候后者的效果甚至会更好些。例如，现在有许多学校尝试让学生们栽种树木，打理花园和自然区。栽种并照顾小树、观察小树在一年中的生长周期，并且与他人讨论小树的生态位（是一个物种所处的环境以及其本身生活习性的总称），都算是一种“边做边学”的活动，这一方法可以在更多的学校进行推广。这种教学方式与较为传统的逐章逐课教学以及近期流行的电脑教学都有着明显的不同。当然，室内课堂可以，也应该和室外课堂进行互补。那些抽象的、理论性的观点可以在室外实践式课堂中进行教授。校园同样



(journal writing), social studies (urban agriculture) and art (scarecrows). Many campus projects also lend themselves to community service learning by interacting with the surrounding neighbourhood.

As with the school building, the use of the campus/schoolyard is dependent upon the condition of the facility and upon the site's programmatic content. Traditionally, campus has been seen as recreational open spaces that may contain ball fields and courts or play structures. At worst, they may have become unsafe vacant lots or parking annexes. Over the past several years, we have seen an emerging effort to tie school grounds to the core mission of the school – teaching & learning. The concept of the outdoor classroom has captured the imagination of local education advocates and practitioners have been actively engaging students in a variety of hands-on, experiential learning activities. From mapping and measuring to gardening and meteorology, to drama productions and student-drawn murals, we are witnessing a pedagogical surge that combines the best aspects of creative play and academic learning. The campus of the 21st century is a multi-use site that fosters recreational, academic, and social activities and strives to weave its functionality into the fabric of school and community culture. (Figure 7)

Figure 6 The design for the James Square reflects current educational and social needs while respecting the historic heritage of McGill University's 19th century buildings. The design goal was to create a coherent space where social and academic life could comfortably and safely extend into the outdoors.

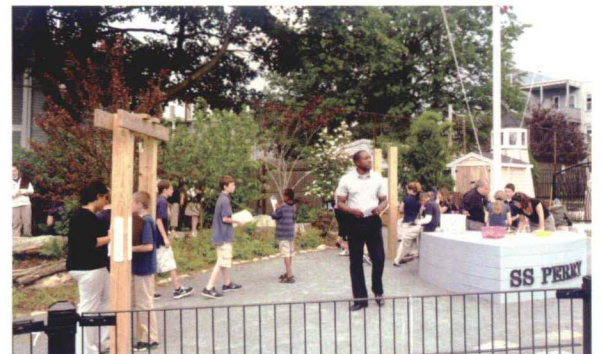
Figure 7 The Perry School is located in the dense residential City Point neighbourhood of South Boston with direct views to Dorchester Bay and the Boston Harbour Islands. The programme requirements for outdoor play are established to maximise opportunities for active and imaginative play. BSI's primary goal is to 'transform schoolyards into dynamic centres for recreation, learning and community life.'

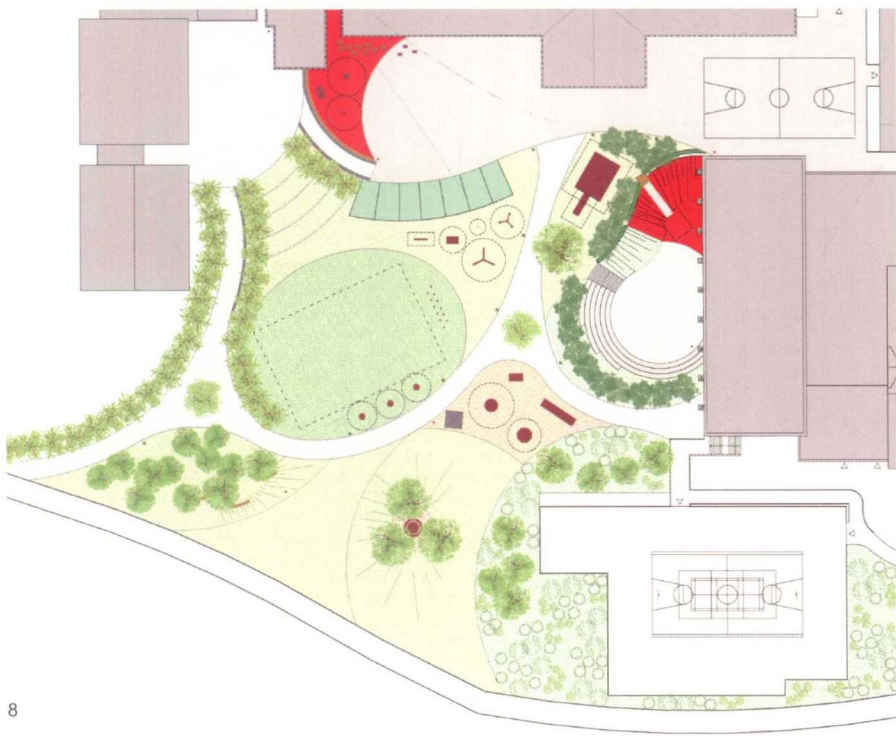
图6 詹姆斯广场的设计反映了当前的教学和社交需求，同时也尊重了麦吉尔大学19世纪建筑的历史价值。设计目标是打造一个连贯的空间，让社交和教学活动能够舒适、安全地扩展至室外。

图7 佩里学校位于南波士顿一片密集的住宅区，可以直望多尔切斯特湾和波士顿港岛。露天运动设计要求的建立是为了最大化主动和富有想象力的游戏。波士顿学校运动场联盟的主要目标是“将运动场改造成为活跃的休闲、学习和社区生活中中心”

适用于多学科教学，学校的花园就是一个典型的例子，可以作为多个学科的教学工具，包括数学课（进行测量和计算）、科学课（认知和学习环境）、识字课（写日记）、社会课（城市农业）以及艺术课（编制稻草人）等。此外，许多校园项目还能通过与周围邻居互动交流的方式，培养学生们为社区服务的意识。

与学校建筑一样，校园的运行和使用状况取决于场地和设施的状况。传统意义上，校园就是指包含球场、赛场或游乐设施的开放式娱乐空间。在最坏的情况下，校园可能会沦为存在安全隐患的空地或是停车场。在过去几年中，人们付出了大量的努力，以构建校园设计与学校的核心教学及学习使命之间的联系。室外课堂的理念激发了教育倡导者和从业者的想象力，他们不断地鼓励孩子们参与各种各样的实践性课程和体验式学习活动。从对花园和气象进行画图 and 测量，到从事戏剧和壁画创作，我们见证了一股教学方法的改革狂潮，取创造性游戏和学科学习之精华。21世纪的校园应该是一个供学生们娱乐、学习和社交的多功能场地。（图7）





8

CHAPTER THREE: CATEGORIES AND CHARACTERISTICS

3.1 K-12

3.1.1 Primary School

The designers should make maximum use of the site provided which should be reflected in their design proposal. The layout should be designed to minimise the need to dispose of excavated material off-site.

The site constitutes the building, playing fields, any agreed supplementary area, and access which should be designed to ease the management of the school. Sites should generally be of regular shape, reasonably level, good road frontage, be without obstruction and have reasonable space for developing a set-down/pick-up area. (Figure 8)

Landscaping should be simple, cost effective and easy to maintain. The Designers should consider the natural paths and routes through the site to the school entrances in determining the appropriate location and the extent of paths provided. Large areas of hard landscaping should be avoided.

Design Teams should consider the design of landscaping elements to promote more imaginative play and complement the teaching environment in their design proposals. External space for planting, weather recording, sundials etc., should all be explored. Such shrubs and trees should help define the site boundaries and external circulation routes, and should be hardy, durable and low maintenance.

In new schools, the hard surfaced games courts and junior play area should be provided as specified in the schedule of accommodation. The area of hard play is inclusive of ball-courts and junior play but exclusive of roads, paths, etc.

In the case of an extension to an existing school, the existing hard courts should

第三章 类别及特点

3.1 基础教育

3.1.1 小学校园景观设计

景观设计师在对小学校园进行设计时，应最大程度地利用原有场地，尽量把从场外挖出的材料应用在新的项目中，并将原场地的再利用情况体现在设计方案中。

在对小学校园的教学建筑、操场、其他辅助区和出入口进行设计时，务必确保设计要易于学校的管理。一般情况下，校园应该是规则形状的，地势的高度要在合理范围内，周围交通要足够通达，此外还应设置家长接送区。（图8）

小学校园的景观设计要简洁，具有较高的成本效益，并且要易于维护。在为小学校园进行道路设计时，设计师应参考并充分利用场地原有的自然路径，以此来决定新道路的位置和长度。应尽量避免大面积的硬景观区域。

在草拟设计方案时，设计团队应注意：校园景观元素的设计要能够促进创造性游戏的发展，对教学环境也要起到一定的辅助作用。用来栽种植物、记录天气和安装日晷的空间，应事先经过勘察。校园的边界和外部通路应栽种一些抗逆性强、持久和低维护的灌木和树木。

如果是新建的学校，则应根据设施明细表的具体要求建造硬地游戏区和低年级游乐场地。硬地游戏区包括球场和低年级游乐区，而不包括街道和小径等。



be retained where possible. Laying out a variety of courts within a single multi-use games area makes supervision easier and extends the range of games. The location of the hard play area should be considered in the context of future expansion of the school in order to eliminate future disruption, nugatory expenditure, and rebuilding at a later stage.

Hard-play areas may be designed to cater for occasional use as overflow car parking and should be located adjacent to the external vehicular circulation. The location of play areas shall be integrated into the external environmental education plan. Separation of Junior and Senior hard play areas should be agreed in discussion between the school and the Department.

A ball-court area includes a run-off space around the playing area and shall be properly graded, drained and appropriately lined. Poles with hoops and backboards for basketball shall be supplied and fitted. The courts shall be marked for basketball and a high power coated weld mesh fence around the courts, with lockable access gates provided. Where more than one court is provided the fence should surround the group of courts and not individual courts. Sockets shall be provided at the half way point on each court for possible future installation of volleyball poles and net. (Figure 9)

Adequate surface water drainage shall be provided from all hard play areas without compromising the safety of user during play. In providing such drainage, consideration must be given to the possibility of some games being played across the basketball courts. A duct with draw wire should be provided to allow for possible future services to hard play areas from the nearest internal services position (e.g. plant room/switch room/store etc.).

The residual site area of the external play areas after the development of hard play area should be seeded for grass. Where site area and configuration permits, an area should be reserved suitable for use as a practice playing field.

如果是对一个已存小学进行扩建，则应尽可能保留原来的硬质场地。将一个大的多用途游戏区划分成几个不同的场地，这样不仅更有利于监管，还扩大了游戏的范围。在确定硬质场地的位置时，应先考虑今后学校是否会进行扩建，以减少不必要的浪费。

有些时候，学校的停车位可能会不足，需要将车辆临时停放在硬质游戏区，因此，最好把硬质游戏区建造在机动车通道附近。此外，游戏区的位置应与室外环境教育计划相统一。学校和各个部门应该就是否将低年级硬质游戏区与高年级的分开达成一致意见。

球场的比赛区周围需设置一个缓冲区。篮球场地需安装篮球架、篮筐和篮板，并且要明确标记是篮球场。球场四周需安装高强度的焊网围栏，并配备带锁的入口门。如果不只有一个球场，则应在所有球场的周围安装一套围栏，不需要每个球场都安装。应在每个球场的中间位置安装接口设施，以便未来可能会安装排球网架。图9

所有硬质游戏区都应配备足够多的地面排水设施，但其前提是要保证学生们的安全。此外，还要确保排水设施不会影响学生们在篮球场上进行游戏活动。应在机房、转换室或储藏室等位置安装一个导管，因为日后游戏区有可能会用到它。

建造好硬质游戏场地后，剩余的区域应栽种绿草。如果条件允许的话，还应设置一块练习区。

3.1.2 初中、高中校园景观设计

初中和高中的操场及室外空间的设计要有一个总体规