SEARCHING FOR A COMMON FRAMEWORK
FOR EDUCATION AND ARCHITECTURE THROUGH RECONSIDERATION OF
UNIVERSAL DESIGN PRINCIPLES FOR PROMOTING
INCLUSIVE EDUCATION IN PRIMARY SCHOOLS

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submitted by **SELEN DURAK** in partial fulfillment of the requirements for the degree of **Doctor of Philosophy in Department of Architecture, Middle East Technical University** by,

Prof. Dr. Canan Özgen   _____
Dean, Graduate School of **Natural and Applied Sciences**

Assoc. Prof. Dr. Güven Arif Sargın   _____
Head of Department, **Architecture**

Assoc. Prof. Dr. Mualla Erkılıç   _____
Supervisor, **Dept. of Architecture, METU**

Examining Committee Members:

Prof. Dr. Vacit İmamoğlu   _____
Dept. of Architecture, METU

Assoc. Prof. Dr. Mualla Erkılıç   _____
Dept. of Architecture, METU

Assoc. Prof. Dr. Zeynep Uludağ   _____
Dept. of Architecture, Gazi University

Assoc. Prof. Dr. Tevhide Kargın   _____
Dept. of Special Eduation, Ankara University

Dr. Nejla Okur   _____
Prime Ministry Administration for Disabled People

Date: **June 30, 2010**

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Last name: SELEN DURAK

Signature :

ABSTRACT

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Durak, Selen

Ph.D., Department of Architecture

Supervisor: Assoc. Prof. Dr. Mualla Erkılıç

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In recent years, as sensitivity for human rights and diversity in society increased, *inclusion* has become an important subject matter for discussions both in wider social context as a parameter reflecting more conscious and democratic understandings of human world, and in particular context of different disciplines.

Inclusion has become a widely discussed theme of *inclusive education* practices both internationally and in Turkey, as well as a central theme for *Universal Design* approach. In education, inclusion is a challenge which calls for a comprehensive institutional restructuring and demands adaptations in physical education environments. This condition implicitly challenges architects to take action for developing effective design approaches in order to create inclusive education environments.

This thesis is a search for a common framework for education and architecture for promoting inclusive education in primary schools. Despite the potential of Universal Design principles for bringing education and architecture together for this common goal, Universal Design approach remains limited for promoting a comprehensive understanding of inclusion.

Through a comprehensive review of legislations, literature and a case study carried out for conceiving practical concern of inclusive education, this study broadens the notion of

inclusion and claims that inclusion is an ongoing process during which students develop their capacities with the provision of equal opportunities of access to educational resources, supportive services, teachers, professionals and effective education environments. Depending on this thesis' *process-based and student-centered understanding of inclusion,* Universal Design principles are differentiated by focusing on design aspects which maximize students' individual strengths during inclusive education process.

Keywords: inclusion, diversity, inclusive education, Universal Design, primary school design.

ÖZ

EVRENSEL TASARIM PRENSİPLERİ ARACILIĞI İLE İLKÖĞRETİM OKULLARINDAKİ KAYNAŞTIRMA UYGULAMALARINI DESTEKLEMEK ÜZERE EĞİTİMDE VE MİMARİDE ORTAK BİR ÇERÇEVE ARAYIŞI

Durak, Selen

Doktora, Mimarlık Bölümü

Tez Yöneticisi: Doç. Dr. Mualla Erkılıç

Son yıllarda, toplumda insan hakları ve farklılıklar konularındaki duyarlılığın artması ile birlikte, *kaynaştırma* kavramı hem toplumsal bağlamda bilinçlenme ve demokratik anlayışları yansıtan bir parametre olmuş, hem de farklı disiplinlerdeki tartışmaların önemli bir konusu haline gelmiştir.

Ulusal ve uluslararası *kaynaştırma eğitimi* uygulamalarının önemli bir tartışma konusu olan kaynaştırma kavramı, *Evrensel Tasarım* yaklaşımının da dayandığı temel bir kavram olarak karşımıza çıkmaktadır. Eğitimde kaynaştırma, kurumlarda kapsamlı bir yeniden yapılanma ihtiyacı doğurmanın yanısıra fiziksel eğitim ortamlarının da adaptasyonunu gerektirmektedir. Bu durum, mimarları kapsayıcı eğitim çevrelerinin tasarımında etkili mimari yaklaşımlar geliştirmek üzere üstü kapalı olarak göreve çağırmaktadır.

Bu çalışma, ilköğretim okullarındaki kaynaştırma uygulamalarını desteklemek üzere eğitimde ve mimaride ortak bir çerçeve arayışıdır. Evrensel Tasarım prensiplerinin, eğitim ve mimariyi ortak bir amaç için aynı zeminde buluşturma potansiyeline rağmen, Evrensel Tasarım kapsamlı bir *kaynaştırma* anlayışı önermede sınırlı kalmaktadır.

Bu çalışmada kaynaştırma eğitimi ile ilgili yasal düzenlemeler ve literatür incelenmiş, kaynaştırma uygulamasına yönelik bilgi sahibi olabilmek için alan çalışması yapılmıştır. Bu

çalışmalara dayanılarak kaynaştırma kavramı açılmıştır. Bu çalışma, kaynaştırmayı, her öğrenciye eğitim olanaklarından, destek hizmetlerden, öğretmen ve uzmanlardan ve etkin eğitim ortamlarından yararlanmada fırsat eşitliği sağlayan ve bunun sonucunda da öğrencilerin kapasitelerini üst düzeye çıkardıkları bir süreç olarak tanımlamaktadır. Bu çalışmanın önerdiği *süreç temelli ve öğrenci merkezli kaynaştırma* anlayışına dayanılarak, kaynaştırma eğitimi sürecinde öğrencilerin bireysel kapasitelerini arttırmaya yönelik tasarım prensipleri geliştirilmesine odaklanılmış ve Evrensel Tasarım prensipleri yeniden yorumlanmıştır.

Anahtar Kelimeler: kaynaştırma, farklılıklar, kaynaştırma eğitimi, Evrensel Tasarım, ilköğretim okul tasarımı.

To my family

Aytunç, Müge and Damla

ACKNOWLEDGMENTS

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ABBREVIATIONS

ADA	: Americans with Disabilities Act
ADAAG	: ADA Accessibility Guidelines for Buildings and Facilities
CEBE	: Center for Education in the Built Environment
COE	: Council of Europe
DDA	: Disability Discrimination Act
DİE	: Republic of Turkey The State Institute of Statistics (Devlet İstatistik Enstitüsü)
DSP	: Designated Special Provision
EFA	: Education for All
FAPE	: Free and Appropriate Education
ICF	: International Classification of Functioning, Disability and Health
IDEA	: Individuals with Disabilities Education Act
IEP	: Individualized Education Programme
LRE	: Least Restrictive Environment
M.E.B.	: Republic of Turkey Ministry of Education (T.C. Milli Eğitim Bakanlığı)
OECD	: Organization for Economic Co-operation and Development
SEN	: Special Educational Needs
SENDA	: Special Educational Needs and Disability Act
TDA	: Training and Development Agency for Schools (in United Kingdom)
T.T.K.B.	: Republic of Turkey Presidency of Education and Discipline (Talim ve Terbiye Kurulu Başkanlığı)
TÜİK	: Republic of Turkey Prime Ministry Administration of Statistics Institute (T.C. Başbakanlık Türkiye İstatistik Kurumu)
UD	: Universal Design
UDL	: Universal Design for Learning
UNCRC	: United Nations Convention on the Right of the Child
UNCRPD	: United Nations Convention on the Rights of Persons with Disabilities

UNESCO   : United Nations Educational, Scientific and Cultural Organization

WHO   : World Health Organization

CHAPTER 1

INTRODUCTION

Inclusion is a significant term, which is used widely in the past few decades in the fields such as sociology, psychology, education, architecture, product design, management, administration, communication and interactive technology with regard to the issues of *human rights, diversity*, *accessibility* and *participation*. *Inclusion* is a condition of building a democratic society, social justice and participation in economic, social, cultural and political processes that affect individuals' lives.

Human rights have become an important issue in all nations following the World War II. In December 10, 1948, United Nations adopted the Universal Declaration of Human Rights which became a fundamental instrument worldwide, appealed when rights-based issues came into question. Until today, human rights have been reinforced with the following human rights treaties (Table 1.1) and other instruments relating to securing civil, political, economic, social and cultural rights and preventing discrimination of all types against all individuals.

Table 1.1 Major human rights treaties following Universal Declaration of Human Rights

1965	International Convention on the Elimination of All Forms of Racial Discrimination (ICERD)
1966	International Covenant on Civil and Political Rights (ICCPR)
1966	International Covenant on Economic, Social and Cultural Rights (ICESCR)
1979	Convention on the Elimination of All Forms of Discrimination against Women (CEDAW)
1984	Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment (CAT)
1989	Convention on the Rights of the Child (CRC)
1990	International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families (ICRMW)
2006	Convention on the Rights of Persons with Disabilities (CRPD)

Adapted from Office of the United Nations High Commissioner for Human Rights website

Children rights began to be considered in parallel with the other human rights. Children besides adults began to be regarded with the adoption of United Nations' Universal Declaration of Human Rights, in 1948. In 1959 the UN General Assembly adopted the second Declaration of the Rights of the Child which consisted of ten principles regarding the best interests of children. But this was only a statement of intent. With the growing awareness for promoting the rights of children, the necessity for a more comprehensive and a legal instrument which should focus only on children was entailed. The efforts for developing a treaty for children began in 1979. United Nations Convention on the Rights of the Child was adopted as an international treaty in November 20, 1989 after a course of 10 years work (Every Child Matters Programme, 2009) and became prominent for being the most widely ratified human rights treaty in history.

With this Convention, participation became an important issue for enhancing children's rights. Participation article (Article 12) can be seen as the keystone of the Convention on the Rights of the Child. Violation of this right will disable the realization of the rights of children mentioned in other articles of the Convention (Sinclair, 2004). This article claims that:

> States Parties shall assure to the child who is capable of forming his or her own views the right to express those views freely in all matters affecting the child, the views of the child being given due weight in accordance with the age and maturity of the child. For this purpose, the child shall in particular be provided the opportunity to be heard in any judicial and administrative proceedings affecting the child, either directly, or through a representative or an appropriate body, in a manner consistent with the procedural rules of national law (UNCRC, 1989).

1.1 Developing Interest for Inclusion of Children with Special Needs in Social Life, Education and Architecture

In education, *inclusion* is a term which refers to the accessibility of education rights of all children, the provision of equal opportunities, the recognition of diversity rather than assimilation amongst all students and the reflection of elimination of social exclusion and discrimination. Schools are the first environments where individuals recognize the requirements of democracy, equity and regarding others rights.

The Universal Declaration of Human Rights (1948) affirms that education is essential for the full development of the human personality and reinforcement of respect for human rights and fundamental freedoms. In Article 26, the role of education in promoting "understanding,

tolerance and friendship among all nations, racial or religious groups" has been emphasized (United Nations, 1948).

Inclusive education begins with teaching tolerance for those who are different within one's own environment. It is a comprehensive term which embraces the issues regarding global education, special education, and disability studies (Landorf, et al. 2006:58). This notion covers a large spectrum of individual differences depending on age, gender, ability/disability and ethnic, cultural, linguistic and religious background. Among these factors disability is viewed as one of the most possible cause of educational marginalization and a basis for exclusion from society and school (EFA 2010 Report:181).

The understanding of disability and attitudes of society towards people with disabilities changed over time. As the definition of the notion of disability changed from medical to social model, the treatment of people with disabilities in society and school also changed. In medical model, people with disabilities were viewed as having a condition that set them apart from the rest of society (EFA 2010 Report:181), were treated as dependent, passive recipients of care and services (Sandhu, 2001:3.4) and were confined to special institutions or homes (Tappuni, 2001:63.1). This understanding caused discrimination, isolation, stigmatization and exclusion. The prevailing misconception which prevented people with disabilities from participating in the life of the community was that their contributions to socioeconomic development of a country were less than people without disabilities (Tappuni, 2001:63.2). Recently, it is widely accepted that although disabilities involve varying levels and types of impairment, it is social, institutional and attitudinal barriers that limit the full inclusion of people with disabilities.

This shift of understanding in disability marks a major paradigm shift in social sciences which emphasizes the importance of identifying and removing the barriers in the environment (EFA 2010 Report:181). In 2001, World Health Organization (WHO) introduced the *International Classification of Functioning, Disability and Health (ICF)* as a framework for measuring health and disability and mainstreamed the notion of disability as a universal human experience which everyone can experience depending on an illness, an accident and a hazard at some unexpected time in life. World Health Organization (WHO) makes a distinction between the definition of the terms impairment and disability. WHO considers impairment as the functional (physical, mental, behavioral) limitation of the

individual, and disability as the barriers in the environment that impose limitations on the individual regarding her/his functional impairment (WHO 2010).

In general, as viewed from human rights perspective, inclusive education can be identified as educating children with disabilities in regular classrooms (instead of being isolated in segregated learning environments), with their so-called "normal" peers. This is a necessary condition for inclusive education, but it is not yet the exact definition. Inclusive education should be conceived in a broader framework including the provision of access to school facilities, learning resources and curriculum adapted to each individual's needs, and educators (general and special education teachers, paraprofessional educators or teaching assistants, therapists, principals, vice-principals, advisors) who are equipped to meet specialized needs of each individual in the regular classrooms.

> Integrating children with disabilities into the standard education system is a preferred policy option because it can break down the segregation that reinforces stereotypes. But integration is not a panacea. Children with severe disabilities may require highly specialized support. Moreover, integrating children with disabilities into poorly resourced, overcrowded schools with restricted access to toilets and other facilities is not a prescription for inclusive education, especially when teachers are not equipped to meet their needs. Placing deaf children in schools where none of the teachers can communicate in sign language will do little to alleviate their disadvantages. And very few schools in the poorest countries, or even in middle income countries, have access to Braille textbooks or teachers able to teach Braille. It is therefore critical that moves towards integration are part of a broader strategy encompassing teacher training, school financing and other measures (EFA 2010 Report:202).

There has always been a heterogeneous group of students in general education classrooms. However, traditional schooling system was organized as to fulfill the needs of a group of students who have average standards and forced *others* to approximate the average group rather than providing specialized services for each particular student. Therefore, most of the students with special educational needs, although being physically existent in a general education environment, could not have exercised their right to education properly depending on the lack of special facilities appropriate to their unique needs and interests.

As countries begin to develop inclusionary policies for public education, diversity becomes the norm in classrooms through the implementation of inclusive practices in education environments. In schools, students with disabilities represent the largest group of students with special educational needs (Gargiulo and Metcalf, 2010:5). Therefore, inclusion has been understood as an issue related to prioritization of the needs of a particular group of students

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with disabilities, who although major group among student demanding special services, are minor among the overall number of school-age children.

In the last decade, diversity extends beyond the realm of students with disabilities and begins to involve a broad range of children with special needs such as students who are gifted and talented, students who are culturally and linguistically diverse and students who are at risk (Gargiulo and Metcalf, 2010:3). Inclusion also considers the variations among students who have typical developmental characteristics appropriate to their own chronological age. Each children, whether with special needs or not, have unique learning characteristics. The understanding of *inclusion* shifted from one which is limited with disability issues, to *a systematic approach which covers the educational needs of a majority of all school-age children*.

Inclusive education can be viewed as a milestone in education worldwide, since it calls for a comprehensive institutional restructuring in schools in terms of teachers' training, teachers' educational practices, educational programmes, curriculum content and reconfiguration of physical environments in schools which are integral part of the education system where educational approaches and objectives of educational systems are realized. Through its legislative framework in both Turkey and abroad, inclusive education challenges architects in developing effective design approaches for creating inclusive education environments.

The increasing awareness and sensitivity in society about diversity, social inclusion and participation has brought *inclusion* also into the discussions of design-related principles. Universal Design, emerged as a new paradigm that reflects this shift of understanding in both architecture and product design. It refers *inclusion* as enabling accessibility and usability of products, buildings, environments and communication for all. The underlying idea is providing equal opportunities of use for all members of the society. In order to understand this recent shift of understanding in design, a comprehensive summary regarding the state-of-art in design research in the second half of the 20th century is given below.
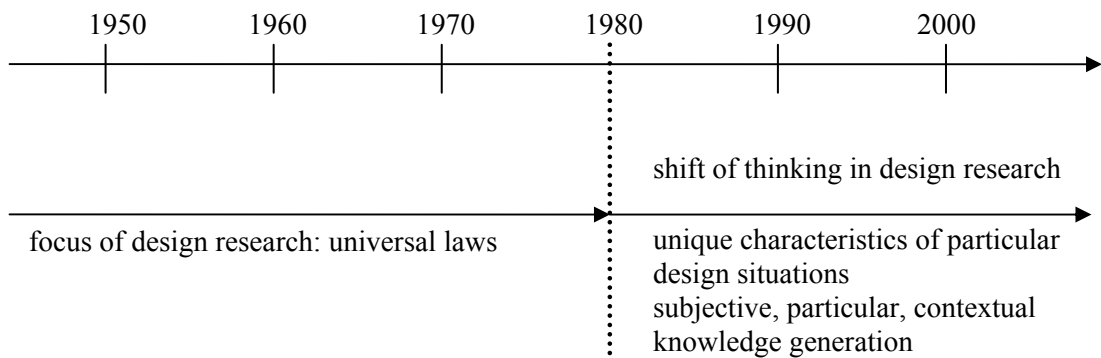
Figure 1.1 State-of-art in design research since 1950s

In the field of social science and the built environment, 1950s, 1960s and 1970s are characterised by "mass solutions to mass problems". The focus of design research was on searching for universal laws rather than the unique characteristics of particular design situations. In 1980s, there was a shift in thinking towards more focused and individual solutions which began to be viewed in a wider social context. In 1990s, there was an increasing concern for the generation of subjective, particular and contextual knowledge in design. As the focus of design shifted from universal to particular, Universal Design has been introduced as an alternative design approach, which aims to inject a social and environmental philosophy in design (Edge and Milner, 1998:44-53, Sancar,1990:221, 222).

Paralel to the developments in education and architecture, in the early 1990s, in social science literature on development, there was a shift of understanding from economy-centered towards human-centered development (Sen, 2003). Human development approach emerged with the objectives of providing equal opportunities for all, extending human capabilities and promoting the realization of human rights regarding all aspects of the society. From the human development perspective, architecture can be viewed as a medium for extending human capabilities by introducing design solutions that respects the rights of all people for independent living, social inclusion and democratic participation in the life of the community.

1.2 Definition of the Problem

Inclusion is a controversial notion. There are opponent points of view about the source of inclusion. This study poses some questions regarding the conceptual status of the notion of inclusion. Has the term its source in ethical-political and rights-based issues or in epistemic and knowledge-based issues, or in both? It is widely agreed upon that it is moral to involve people in decisions of public concern. Regarding the epistemic status of the notion raises some questions as such: Is it possible to bring all people into the conversations? Is it valid to include all people into the conversations outside the area of their profession/specialization? If all people are agreed upon a claim, does the claim have an epistemic justification?

The long-standing particular/universal dichotomy has become evident with the diffusion of inclusionary ideas and practices in all aspects of the society. These two terms are viewed as either incompatible terms that reject each other or consistent terms that reinforces the notion of inclusion. Does inclusion ignore the universal standards for the sake of recognizing the particularities of each individual or vice versa? These questions call for clarification of how inclusion approaches particularity and universality.

The notion of "inclusion" is getting a significant issue in different disciplines in social system organisations such as education, architecture, management administration, communication, interactive technology, etc. The progress towards inclusion in each discipline is part of a comprehensive policy for the development of an inclusive society for all. The aim of "inclusionary discourses" is to involve all people into the practice of different disciplines regardless of age, ability, gender, cultural and religious background, etc. However, there is a conceptual ambiguity regarding the notion of inclusion in general, in education and in architecture.

There are common misunderstandings regarding inclusive education. Inclusion is generally viewed as accomodating students with disabilities in general education classrooms (Lewis, 1995; Sarı, 2000) and providing special services only for a particular group of students. However, in addition to students with disabilities, there are also students who await special support in general education classrooms depending on their unidentified learning difficulties or strengths, temporary illness and their vulnerability to the sociocultural and socioeconomic factors that decrease their performance. There are also a group of students who are gifted and

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talented and who have diverse cultural and linguistic background (Gargiulo and Metcalf, 2010:3). The notion of inclusion in education extends far beyond the issues of accomodation and disability.

There is a vast amount of literature which focuses on inclusive education. Some of them approach the problem of inclusion from human rights perspective and explain treaties, legislations, statements and policies (Kugelmass, 2004; Miles, 2000). Case studies are significant in understanding children's, teachers' and families' satisfaction with this inclusive process (Lewis, 1995; Pivic et al, 2002). Barriers and facilitators for inclusive education environments are described in these studies. The necessity of collaboration of children, teachers, peers and parents are emphasized (Miles, 2000; Pivic et al, 2002). This extensive knowledge base on inclusive education has contributed to developing a broadened understanding of inclusion in this study. However, there is still a demand for the clarification of the mission of inclusive education for the design of effective education environments which integrate all children.

There has been a shift in priorities in design during the past two decades. Universal Design emerged as a response to the increasing awareness on the increasing diversity of society and the need for a design process that accomodates all people. Universal Design regards the notion of inclusion as a rights-based, ethical, moral issue, and a requirement for a democratic society. This approach criticizes the design approach that fulfills the requirements of building codes and regulations in order to meet the specialized needs of people with functional limitations (Ostroff, 2001:1.5). It acknowledges the unnecessity and inefficiency of specialized design (Steinfeld, 1994; The Center for Universal Design, 2008) and emphasizes the provision of equal opportunities of access to the products and built environments for all.

The emphasis on *design for all rather than specialized design* leads Universal Design to be misconceived as an approach which disregards individuals' particular needs. In theory, Universal Design makes an intensive emphasis on the significance of design process in achieving value-based ends such as **social inclusion, equity, equitable access** and **equal chances of participation** in economic, social, cultural, leisure and recreational activities (Council of Europe, 2001; Erlandson, 2008; Steinfeld, 1994). However, in practice, the designs developed through Universal Design principles do not involve any hints about the

design process which result in achieving such value-based ends. The design outcomes provide mere technical solutions (Imrie, 2004:282) rather than addressing the issue of inclusive design process. This study claims that clarifying and expanding the notion of inclusion is necessary for the differentiation of principles of Universal Design to create more inclusive primary education environments.

1.3 Aim and Scope of the Thesis

The notion of inclusion is the focus of rights-based, moral and human-centered understanding in education and design. Inclusion has revealed its epistemic status in the manifestation of inclusive system of education that supports equitable access to school facilities, learning resources, curriculum and educators available to meet specialized needs of each individual in the regular classrooms. Inclusion should be conceived more than social system of *bringing together* all students with diverse educational needs and different learning styles in a single education environment. The student population in primary schools involves diverse levels of accessibilities and capabilities. This diversity is viewed as an enriching source for learning and is valued for it promotes positive learning outcomes.

Inclusive education must be perceived as an education strategy that promotes wide level of accessibility, diversity and integration while protecting, first of all, the particularity of each student's multiple levels of capabilities in a productive education environment. Similarly, the issue of inclusion in Universal Design for education environments must be perceived more than simply a rights-based and a moral issue of equality. The notion of inclusion in education environments implies an understanding of *integrated* and *unified spaces* for all students which value primarily personal educational needs and necessities of each student.

This thesis involves a critical analysis of the understanding of *inclusion* within the Universal Design literature and presents a broadened understanding for the notion of *inclusion* in general, in education and in architecture through reconceptualizing the term depending on an epistemic framework besides moral and rights-based understanding of the notion. This study aims to describe the relationship between self and environment in inclusive education environments through comparing two models which illustrate the differences between literal understanding and broadened understanding of the notion of inclusion.

Literal understanding of inclusion demands the adaptation of the self to the education environment without pursuing any changes in the environment. On the contrary, broadened understanding of inclusion demands necessary adaptations in the education environment without forcing the self to adapt herself/himself to the education environment. *Inclusion* in this understanding is an *ongoing process* during which students develop their capacities and achieve their full potential in an effective education environment where adaptations and all necessary educational services are centered around students' unique, particular needs. Inclusion is a means for achieving educational objectives determined for each particular student. Broadened understanding of inclusion, that is developed throughout this thesis, claims that inclusion aims at a *process-based and a student-centered* integration of all children in general education system.

In this thesis, it is assumed that *education and architecture have a common framework for the discussions of inclusion and the promotion of inclusive education environments through the consideration of Universal Design principles by the help of broadened understanding of inclusion which is process-based and student-centered.*

This thesis outlines the concepts, themes and practices in the legislations and literature related to inclusion in general, in education and in architecture. However, the theoretical understanding of inclusive education derived from this body of knowledge needs support from the field of practice in education in order to have a complete understanding of the notion of inclusion. Therefore, a case study has been carried out in order to describe the practical concern of inclusive education.

Two primary schools, one from Turkey, the other from United Kingdom are selected, since they implement principles of inclusive education mandated in the legislations during the process of integrating all students into primary education system. Case study involves open-ended questions which aim to identify the participants (teachers), to describe their critical views and ideas about inclusive education practice and its general principles, to reveal teachers', students' and other participants' use of physical environments in the school, to understand teachers' ideas about ideal education environments and to involve their suggestions and expectations regarding the design of physical education environments into this study. Information related to the architectural design and spatial organization of these

schools has been illustrated in order to reveal the conditions of education environments where inclusion is adopted and practiced.

In this study, the legislative and conceptual framework of inclusion provide a basis for understanding the practical concern of inclusive education and the physical parameters of inclusive education environments, thus establishing a common framework for education and architecture through the differentiation of Universal Design principles which emphasize the *process-based* and *student-centered understanding of inclusion*.

This thesis aims to describe *inclusive education environments* by the help of *usability*, which is the important parameter of Universal Design. *Inclusive education environment* can be defined as an integrated environment which accommodates diverse users, whose capabilities are maximized by the provision of a variety of different types of use during the maximum extent of time interval. Spatial requirements of inclusive education environments are determined regarding the parameters of usability such as user type, type of use and period of use.

This thesis aims to provide a knowledge base for architects in order to provide them a broadened understanding of inclusion in education environments and shift their understanding of inclusion from a mere disability issue which leads them to refer to building regulations for seeking accessibility measures towards a more comprehensive understanding which will enable them to understand the very mission of inclusion.

1.4 Structure of the Thesis

Chapter 1 raises questions about the issues regarding inclusion. The conceptual ambiguity concerning the notion of inclusion in general, in education and in architecture is determined. Aims, and scope, methodology, validity and boundary of the thesis are defined.

Chapter 2 elaborates on the problems defined in Chapter 1. The legislations and regulations regarding inclusion, inclusive education and Universal Design have been clarified. An ongoing analysis of the situation of inclusive education and Universal Design worldwide and nationwide has been explained.

Chapter 3 aims to broaden the notion of inclusion and inclusive education. First, the conceptual status of inclusion has been investigated. In order to show the diverse points of views about the source of inclusion, discussions on two contradictory terms universality and particularity have been presented. Some questions regarding inclusion as an ideal or an idea have been posed. The significance of the notion of inclusion in education and the educational approaches that support the manifestation of inclusion have been discussed. Two conceptual models which explain the literal and the broadened understanding of inclusion have been introduced.

Chapter 4 presents the practical concern of inclusive education and their evaluations worldwide. Depending on the knowledge derived from the interviews, this chapter presents the critical views of teachers about their understanding of the notion of *inclusion*, their own inclusive practices and their needs and opinions regarding the physical environment where they teach. The very idea of inclusive education is intended to be disclosed through the scrutiny on sample practical approaches.

Chapter 5 reconsiders the principles of Universal Design with a critical perspective and determines the spatial requirements of inclusive education environments depending on elaborating equitable use principle of Universal Design. The process-based and student-centered aspects of inclusive education environments are determined through the help of differentiated Univesal Design parameters considered in broader caterogies such as process and human function principles.

Chapter 6 overviews the thesis, presents concluding remarks and describes the implications for future research.

1.5 Methodology of the Thesis

This study aims to develop a more comprehensive understanding on a specific subject (inclusion) which is a significant issue on contemporary agenda worldwide, by referring to certain conceptual points of view through three strategies that form the thesis' methodology. *Critical analysis of ongoing situation* is presented in order to broaden the understanding of the notion of *inclusion*, through an overview in general, in educational and architectural terms. *Conceptual disclosure* is used to broaden the understanding of the notion of inclusion.

Two conceptual models which explain self and environment interaction in inclusive education environments are developed. *Case study* and *interviewing technique* are used as qualitative strategies for understanding teachers' views about inclusion, inclusive education and physical education environments.

1.6 Validity and Boundary of the Thesis

This study aims to raise awareness among architects on inclusion and emphasizes the benefits of the knowledge of inclusive education for challenging architects to reveal their creative imaginations and generative ideas during school design at the stage of briefing prior to programming. Besides enabling architects' conceptual disclosure (prestructuring) of the design problem through broadening the idea of inclusion and inclusive education, elaboration on the notion of inclusion in Universal Design throughout the study is assumed to be a contribution for Universal Design literature.

Inclusion is not an end in itself to be achieved with some given prescriptions, regulations or rules, rather it is an *ongoing process* through which education system should pass. First of all, inclusion is a requirement for the realization of a more democratic social system. Without the adaptation of institutions under this social system, design alone cannot determine the conditions of inclusion in educational institutions. There are other variables effecting the conditions of inclusion in education environments which can be determined through developing appropriate social policies and organizational decisions. Therefore, rather than presenting ideal, concrete, particular architectural solutions for the design of new schools and the adaptation of existing schools which use inclusive education strategies, this thesis intends to promote awareness among designers during the process of problem definition/brief stage through clarifying the notion of inclusion and inclusive education and through drawing attention to the spatial foresights, principles and spatial strategies which should come to the fore during the physical formation of inclusive education environments.

Through integrating teachers' critical views about inclusion in education and their needs and expectations regarding the physical space into its methodology, this thesis acknowledges the value of involvement of participants' views, especially in the early stages of the design process, for the design of inclusive schools. However user participation is a comprehensive issue in design which is out of the scope of this thesis.

CHAPTER 2

AN OVERVIEW ON THE NOTION OF INCLUSION
IN GENERAL, IN EDUCATION AND ARCHITECTURE

In order to understand the ideas underlying current debates around inclusion and legislations ensuring equal opportunities[1] of access in education and architecture, this chapter overviews the current legal framework of social inclusion worldwide by referring to the legislations adopted in order to enhance the rights of people with disabilities and ensure their full participation in all aspects of the social life including social, cultural, economic and political issues.

The legal dimensions of inclusive education worldwide have been described for revealing the codes of conduct that the legislations entail. The legal framework for inclusive education is very comprehensible in explaining how the inclusive practice in schools should be implemented. However, generally, there are problems regarding its implementation depending on the lack of provision of necessary school facilities, learning resources, supportive services, educational programmes, professionals and effective learning environments.

Parallel to the developments worldwide, in Turkey inclusive education is being adopted through enactment of relevant laws and regulations. However the progress of the necessary school restructuring for making schools more inclusive is much slower. Therefore, problems are faced during practicing inclusive education. In this chapter, the legal dimensions of

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[1] For the scope of this study, it is necessary to clarify, that *equal opportunities* does not mean merely treating everyone equally. Depending on the fact that every individual does not have the same interests and needs, Leicester (2008: 12) claimed that fair and equal treatment is not equivalent to treating everyone the same. Topping and Maloney (2005:2) noted that treating everyone equally would reinforce existing differences. The concept of *equal opportunities* implies treating every individual differently (in line with their particular needs) so that they would have equal chance to achieve their full potential.

inclusion in Turkish Primary Education have been investigated by referring up-to-date statistical data. The terminology used in Turkish legislations and principles of inclusive education practice has been described.

This chapter also overviews the issue of inclusion in architecture by referring to the legal dimensions and explaining the definition and general aims of Universal Design approach. The development of Universal Design principles and different interpretations of these principles have been illustrated. In the following parts, these principles are elaborated.

2.1 An Overview on the Legal Dimensions of Inclusion in General

From the beginning of 1980s, there was a growing awareness on the rights of people with disabilities. Related legislations and events (Table 2.1) encouraged the development of inclusive policies. These legislations formed the basis of inclusive education and Universal Design in architecture.

Table 2.1 Legislations and events regarding the rights of people with disabilities

Year	Legislations and Events
1981	UN International Year of People with Disabilities
1983-1992	UN Decade for People with Disabilities
1990	ADA (Americans with Disabilities Act) and Amendments Act of 2008
1992	Council of Europe[2] – First European Conference of Ministers Recommendation R(92)6 (a policy for people with disabilities)
1993	UN Standard Rules on the Equalization of Opportunities for Persons with Disabilities
2003	Council of Europe – Second European Conference of Ministers
2005	European Commission's Directorate-General for Employment, Social Affairs and Equal Opportunities declared 2007 as the European Year of Equal Opportunities for All
2006	UN Convention on the Rights of Persons with Disabilities (entered into force in 2008)
2006-2015	Council of Europe Disability Action Plan

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[2] The Council of Europe was founded on 5 May 1949 by ten countries: Belgium, Denmark, France, Ireland, Italy, Luxembourg, the Netherlands, Norway, Sweden and the United Kingdom. The seat of the Council is in Strasbourg, France. Recently, it involves 47 member states one of which is Turkey. Turkey accessed the Council on 9 August 1949. The aim of the Council is to promote human rights and democratic principle throughout Europe based on the European Convention for the Protection of Human Rights and Fundamental Freedoms which was adopted on November 4, 1950 and entered into force on September 3, 1953. Turkey ratified the Convention on May 18, 1954. (Council of Europe in Brief, Council of Europe, 1950).

United Nations declared the year **1981** as the *United Nations International Year of People with Disabilities*, and the decade between **1983-1992** as the *United Nations Decade of People with Disabilities* (Ginnerup, 2009:15). In **1992**, the Council of Europe Committee of Ministers adopted a coherent policy for people with disabilities (known as *Recommendation No. R (92) 6*) following the *First European Conference of Ministers*. This recommendation was a pioneering document since it influenced disability policies for more than a decade which encouraged the development of inclusive policies for the benefits of people with disabilities (Council of Europe, 2006:4).

The *Americans with Disabilities Act* (ADA) which was enacted in **1990** has been a worldwide inspiration on equal rights for people with disabilities (Ginnerup, 2009:15). Changes have been made to the original document by the *ADA Amendments Act of 2008* (Public Law 110-325) and became effective on January 1, 2009. The ADA provides "a clear and comprehensive national mandate for the elimination of discrimination" and equal opportunities for people with disabilities whose full participation in all aspects of society are precluded on the basis of their disabilities (ADA, 1990).

On December 20, **1993**, United Nations adopted the *Standard Rules on the Equalization of Opportunities for Persons with Disabilities* which was developed on the basis of the experience gained during the United Nations Decade of People with Disabilities (1983-1992). These rules encourage countries to ensure quality of life, full participation, accessibility and equal opportunities for their citizens with disabilities. "Equalization of opportunities" is defined as "the process through which the various systems of society and the environment, such as services, activities, information and documentation are made available to all, particularly to persons with disabilities" (United Nations, 1993).

In May **2003**, a decade after the adoption of the Recommendation No. R(92) 6, the Council of Europe established the *Second European Ministerial Conference* in Malaga, Spain with the aim of developing appropriate strategies for achieving progress towards full participation of people with disabilities as citizens in society (Council of Europe, 2006:4).

On June 01, **2005**, European Commission's Directorate-General for Employment, Social Affairs and Equal Opportunities, declared **2007** as the *European Year of Equal Opportunities for All* with the aim of promoting equality and non-discrimination and celebrating diversity

in the European Union (Europa Press Release, 2005). The perspective is broader than disability issues and encompasses as many individuals as possible (Ginnerup, 2009: 19)

An important human rights instrument for enabling inclusion of people with disabilities in all aspects of society is the *United Nation's Convention on the Rights of Persons with Disabilities* which was adopted on December 13, **2006** and entered into force on May 3, 2008. The aim of the Convention is to ensure equal access of people with disabilities to all human rights and fundamental freedoms and to promote their dignity. People with disabilities are defined as having "long-term physical, mental, intellectual or sensory impairments" and barriers in the environment are described as factors that prevent "their full and effective participation in society on an equal basis with others" (UNCRPD, 2006:4).

The general principles of the Convention are respect for inherent dignity, individual autonomy including the freedom to make one's own choices, and independence of persons; non-discrimination; full and effective participation and inclusion in society; respect for difference and acceptance of persons with disabilities as part of human diversity and humanity; equality of opportunity; accessibility; equality between men and women; respect for the evolving capacities of children with disabilities and their right to preserve their identities (UNCRPD, 2006:5).

An important step for promoting inclusion through developing a comprehensive European policy framework on disability is the *Council of Europe Disability Action Plan* **2006-2015** which addresses important issues such as human rights, non-discrimination, equal opportunities, full citizenship and participation of people with disabilities (Ginnerup, 2009: 9, Council of Europe, 2006:4).

2.2 An Overview on the Issue of Inclusion in Education

In the field of education, academic research on the notion of "inclusion" has gained momentum in the mid-1980s depending on the paucity of special education and the search for a new paradigm which would improve existing education system. In the mid-1980s, educational reform efforts involve not only general education, but also special education. The demand for a new paradigm in this field emerged due to the doubts about the efficacy and structure of special education. The value of segregated and integrated settings had been

questioned. The general idea was that a student should be educated in a heterogeneous group of students rather than in a group who "shares a disability classification as the common denominator" (Winzer, Mazurek, 2000:x).

The demand for a new paradigm in special education resulted in a shift of value system in educational institutions from segregation to inclusion. This recent move is identified as inclusive education which supports diversity and active participation of learners (Kugelmass, 2004). Inclusive education has emerged as a movement within the special education reform whose main objective is to "transform schools into places where all students could learn together". Inclusion has been defined as "the move to provide education to children with exceptionalities in the school or classroom that they would attend if they were not exceptional" (Winzer, Mazurek, 2000:x).

Inclusive education is viewed as a dominant education discourse of the 1990s. There has been a pursuit for an inclusive philosophy that all children are integrated effectively into the regular education environments. During the 1960s and 1970s, there were increasing demands for a greater access to the mainstream education among special education professionals and advocacy groups. Since 1990s, full access to restructured general education has been demanded (Winzer, 2006:5,6).

For the scope of this study, the terms *integration, mainstreaming, inclusion* need to be clarified. Although being used synonymously by some people, these terms involve subtle differences. *Integration* has been defined as a physical placement of a child with special needs in general education system without simultaneous change in school approach. *Mainstreaming* has been defined as providing exceptional students with an appropriate education alongside their normally developing peers, regardless of type and severity of disability. Mainstreaming (1) usually only applies to some group of children, especially students with mild disabilities, (2) consists of students with special education service needs and students who move from special classes into regular classrooms and (3) demands children to prove their readiness for an integrated setting rather than the transformation of the setting to include the children. According to the advocates of inclusive education, mainstreaming and integration divide students into groups: one group is viewed as the "mainstream", and the other group cannot fullfil the requirements of the "mainstream", but forced to perform the activities in these setting which accomodate the "mainstream" group.

On the contrary, inclusive education "expects that all children will be based in the schools or classrooms that they would attend if they did not have a disability" (Winzer, 2000:6).

Special Education

'Normal' Education

Special child
Square pegs for square holes
Special teachers
Special schools

Normal child
Round pegs for round holes
Normal teachers
Normal schools

Integrated Education

- Therapy
- rehabilitation

Change the child to fit the system
Make the square peg round

System stays the same
Child must adapt or fail

Inclusive Education

Flexible system:

- Children are different
- All children can learn
- Different abilities, ethnic groups, size, age, background, gender
- Change the system to fit the child

Figure 2.1 Shift of value system in education from special to inclusive education
(In S. Miles, Enabling Inclusive Education: Challenges and Dilemmas, 2000)

Integrated education demands children with special needs to adapt themselves to their education environment without questioning and eliminating barriers in the general education system, and without demanding necessary school restructuring. On the contrary, inclusive education system embraces all students including children with disabilities, questions the

barriers in the education environment, demands necessary adaptations in the general education system and provides necessary supportive services for individuals' particular educational needs (Figure 2.1).

Inclusion is not a universally accepted concept in the field of education. There are diverse and contradictory debates as summarized in Table 2.2.

Table 2.2 Debates about Inclusion

1. General School Reform	
Argument	According to this view, inclusion emerges out of the shortcomings within special education. This view identifies inclusive schooling as a wave of school reform that emphasizes diversity of students and applies to cultural, social, linguistic, racial, gender, mental and physical differences.
Counterargument	This approach has been criticized for its understanding of inclusive schooling as a school restructuring through focusing on the whole school system, not only on students, but also on teachers, users, curricular reforms, policies, so on.
2. Moral Imperative	
Argument	The proponents of moral imperative view inclusion as a value judgement and an ethical issue, emphasizes ideological outcomes and assert the needlessness of empirically testing the effects of inclusion.
Counterargument	This approach has been criticized for its understanding of inclusion as more than the only moral answer. Opponents of moral imperative emphasize the significance of empirical validation and educational outcomes.
3. Civil Rights	
Argument	This view defines inclusive education as a civil right to be educated with one's peers in heterogeneous classrooms rather than segregated settings where disabilities are highlighted and disabled students are taught to be dependent.
Counterargument	This approach has been criticized for its praising education of normally developing students as universally desirable and as the best way for all students to learn; for its emphasis on the significance of place more than learning; and for its emphasis on equal access, participation and benefit rather than learning outcomes.

(Table 2.2 continued) Debates about Inclusion

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4. Dual System (Integration of special and regular education)

Argument	The proponents of this view emphasize the necessity of the elimination of a dual system and assert that special and regular education can no longer exist as separate entities, they should join in order to provide the most appropriate education for every child. They emphasize individualized learning in an integrated setting.
Counterargument	This approach has been criticized for its understanding of inclusion as a collision of two systems. The opponents of dual system claim that there is some group of students who can not benefit from inclusion. They highlight the necessity of separate institutions for students with severe behavioral and intellectual disabilities. They claim that regular classroom teachers cannot be expected to teach children who cannot adapt to the basic expectations of the classroom.

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5. All Teachers Can Teach All Children

Argument	The proponents of this view emphasize the needlessness of radical changes in teacher education and responsibilities; and of different instructional techniques, since children, whatever their abilities and capabilities are, do not differ significantly in educationally relevant ways. They highlight the significance of flexible learning environments with flexible curriculum for individualized learning.
Counterargument	The opponents of this view emphasize the demand for changes in teacher education, in order to provide teachers with the necessary skills to teach children with disabilities, to adapt instruction to meet the needs of all students, depending on their claim that individualization and curriculum adaptations rarely occur in general education classrooms.

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6. Special Education is not Special

Argument	The proponents of this view assert that special education can become general, since it is not different from good general education and all teachers must be prepared to teach all children effectively.
Counterargument	This approach has been criticized since it denies the essence of special education. The opponents claim that there are positive learning outcomes for children with special needs in special classrooms than in regular classrooms and teaching techniques are different.

Adapted from M. A. Winzer, The Inclusion Movement Review and Reflections on Reform in Special Education", in M. A. Winzer, K. Mazurek (Eds.), *Special Education in the 21st Century: Issues of Inclusion and Reform*, U.S.: Gallaudet University Press, U.S., 2000.

There is a broad range of diversities among children in primary education institutions. This diversity reveals that inclusive education cares for providing special services to a majority group of students. Student diversities are classified below depending on:

1. The type of the learner

- Visual/Verbal,

- Tactile/Kinesthetic,

- Visual/Nonverbal,

- Auditory/Verbal (Gargiulo and Metcalf, 2010:191, Winebrenner, 1996:53)

2. Special education needs (SEN)

a. Students with high incidence disabilities and gifts and talents

- Learners with mental retardation

- Learners with learning disabilities

- Learners with speech and language disorders

- Learners with emotional and behavioral disorders

- Learners with Attention Deficit Hyperactivity Disorder

- Learners with gifts and talents

b. Students with low incidence disabilities and other special needs

- Learners with hearing impairments

- Learners with visual impairments

- Learners with autism spectrum disorders

- Learners with physical disabilities, health disabilities, or traumatic brain injuiry

- Learners who are culturally and linguistically diverse

- Learners who are at risk for failure in school (poverty, homelessness, child abuse and neglect) (Gargiulo and Metcalf, 2010:51-52, 88-89)

The concept of least restrictive environments, mandated by the laws, is an important issue to be considered when determining the appropriate education environment for the broad range of individuals with special education needs. Depending on the traditional service delivery model illustrated below (Figure 2.2), it is assumed that as the level of disability becomes

more severe, then the education environment for the particular student becomes less integrated or more separated. Lower levels depict most integrated education environments which involve more children, whereas higher levels represent more restrictive setting with fewer students and most intense supports. There has been also a shift in understanding the idea of service delivery. Contemporarily, flexibility is a significant factor that is introduced in the model. It is suggested that all students should begin in the general education classroom, ascend the model if necessary, and descend if it is claimed as feasible. The education environment can be changed as the special needs of the individual changes.

Fewer children

| Hospital and treatment center |
| Homebound instruction |
| Residential school |
| Special day school |
| Full-time special class |
| Part-time special class (part-time regular classroom) |
| Regular classroom plus resource room services |
| Regular classroom with modifications and Supportive services available |

More children
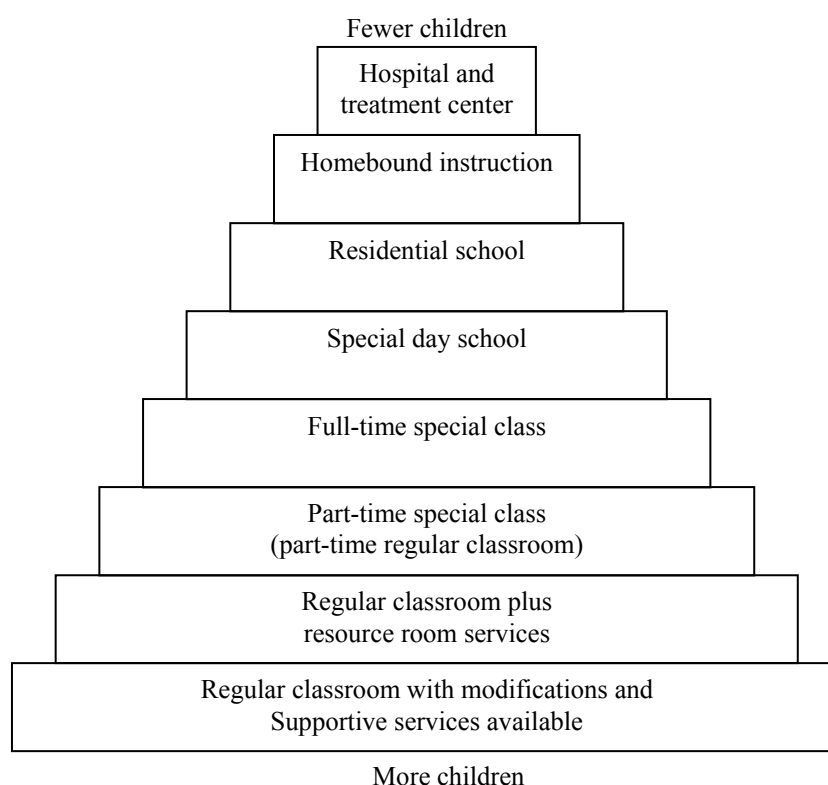
Figure 2.2 Service delivery options in the Least Restrictive Environment (In R. Gargiulo and D. Metcalf, *Teaching in Today's Inclusive Classrooms: A Universal Design for Learning Approach.* Wadsworth: Cengage Learning International Edition, 2010, p. 7)

According to Gargiulo and Metcalf (2010:6) the concept of Least Restrictive Environment calls for maximum opportunity for meaningful involvement and participation of students with disabilities with their peers without disabilities. The degree of involvement and participation is determined according to the unique needs of each individual. Inclusive

education is an *ongoing process* which is realized through providing multiple opportunities for access to learning for each individual with the help of presenting appropriate ways of instruction and educational programme and adapting physical learning environments in line with the individuals' needs and interests.

2.2.1 Legal Dimensions of Inclusive Education Worldwide

Education of children with special educational needs has been provided in segregated environments for years. In the course of time, several ideas emphasizing the problems for these individuals to adapt to daily life emerged. These ideas give rise to the questioning of the placement of children with special education needs in special environments through isolation from their "normally developing" peers. Isolation of any child from her/his peers is contrary to the human rights. Contrary to the prevailing belief, there is not a gap between special and general education in terms of instruction. Effective instructional methods are useful not only for children with special needs but for all children. Some individuals' special educational needs can be better met in general education environments rather than special education environments. Depending on these ideas, mainly in Northern Europe and United States, developed countries began to practice education of children in general education environments (M.E.B., 2009:3).

The recent move to inclusive education worldwide also affected developing countries which tried to adjust their education system to the developed countries. Turkey is among these countries, who have made legal arrangements regarding education of children with special educational needs since 1980s. Although these laws, regulations, instructions and circulars are comprehensive and descriptive enough (M.E.B., 2009:3) in defining how inclusion should be implemented, there are yet some problems in developing appropriate practices depending on inadequate institutional structuring in schools in terms of providing a collaborative teaching team involving general and special education teachers, paraprofessional educators or teaching assistants, therapists and advisors who are equipped to meet specialized needs of children in the regular classrooms, developing effective instructional methods and creating effective learning environments.

In the world, United States and United Kingdom made initial efforts for integrating children with special educational needs into general education system and introduced new ideas into education such as Special Educational Needs, Least Restrictive Environments and Individualized Education Programme. Legislative context of inclusive education worldwide is outlined in Table 2.3.

Table 2.3 Legal dimensions of Inclusive Education worldwide

Country	Year	Legislations and Events
Worldwide	1948	United Nations Universal Declaration of Human Rights
Worldwide	1960	UNESCO Convention against Discrimination in Education
USA	1973	Section 504 of the Rehabilitation Act
USA	1975	Education for all Handicapped Children's Act - PL 94-142
USA	1990	PL 94-142 amended as the Individuals with Disabilities Education Act (IDEA)
USA	1990	Americans with Disabilities Act
USA	1995	Section 504 of the Rehabilitation Act was revised.
UK	1978	Warnock Report
UK	1981	Education Act
UK	2001	Special Educational Needs and Disability Act (SENDA)
UK	2004	SEN Strategy Removing Barriers to Achievement
Worldwide	1990	The World Declaration on Education for All, Jomtien, Thailand, EFA (Education For All) by 2000
Worldwide	1990	European Union Council Resolution on Concerning Integration of Children and Young People with Disabilities into Ordinary Systems of Education
Worldwide	1993	UN Standard Rules on the Equalization of Opportunities for Persons with Disabilities
Worldwide	2000	The World Education Forum, Dakar, Senegal (a decade after the World Declaration on Education for All-to review the progress made since 2000) Aim: to achieve quality basic education for all by 2015
Worldwide	2003	European Union Council Resolution on Equal Opportunities for Pupils and Students with Disabilities in Education and Training
Worldwide	2006	United Nation's Convention on the Rights of Persons with Disabilities (entered into force in 2008)
Worldwide	2006-2015	The Council of Europe Disability Action Plan
Worldwide	2009	UNESCO Policy Guidelines on Inclusion in Education
Worldwide	2010	UNESCO EFA (Eduation For All) Global Monitoring Report

The legislations and regulations regarding inclusion and inclusive education are based on the idea that *every individual has the right to education* as is enshrined in Article 26 of *Universal Declaration of Human Rights* which was adopted by the General Assembly of the United Nations on December 10, **1948**.

> Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit (United Nations, 1948).

The United Nations Educational, Scientific and Cultural Organization (UNESCO) established a meeting in Paris from 14 November to 15 December **1960**, and adopted the principles of *Convention against Discrimination in Education*. The purpose is to identify "the measures to be taken against the different forms of discrimination in education" in order to promote respect for human rights and equality of educational opportunities for all. In the first article of the Convention, discrimination is defined as "any distinction, exclusion, limitation or preference which, being based on race, colour, sex, language, religion, political or other opinion, national or social origin, economic condition or birth, has the purpose or effect of nullifying or impairing equality of treatment in education..." (UNESCO, 1960).

The United States led the way to inclusion in education with the Public Law 94-142, the *Education for All Handicapped Children's Act*, which was enacted in **1975** as a funding law and amended in **1990** as the *Individuals with Disabilities Education Act* (IDEA). This Act acknowledged the states' responsibility for providing students with disabilities education in the Least Restrictive Environment (LRE). IDEA provides a substantive right to a free and appropriate education (FAPE) for students with disabilities and mandated the provision of special education and related services in line with an Individualized Education Programme (IEP) in the Least Restrictive Environment (Klare, 1997:43, 45) which is assumed to be the most natural, mainstream or integrated environment (Thomas and Loxley, 2001:4).

Another law that effected the promotion of inclusive education system in the United States is the *Section 504 of the Rehabilitation Act* of **1973**, which was revised in July 1, **1995**. This Act, together with IDEA, emphasized the significance of Least Restrictive Environment, through the claim that children with disabilities should be educated in the same environments with their peers without disabilities to the maximum extent appropriate to their special needs. If the nature and severity of disability prevents the education of children in general education

environments with supplementary services, then children can be placed in special or separate education environments. Another law which aimed to eliminate discrimination in education is the *American with Disabilities Act* (ADA), enacted in **1990** (Klare, 1997:46, 47).

In United Kingdom, the *Warnock Report* in **1978** and the following **1981** *Education Act*, radically changed the understanding of disability and introduced the idea of special educational needs (SEN). Before, children with special educational needs were categorised depending on their disabilities which led to stigmatization and exclusion. These documents mark a paradigm shift in the history of education and are the manifestations of efforts towards an inclusive approach through defining common educational goals for all children regardless of their disabilities and special needs. Following acts and legislations revealed the progress since the Warnock report towards inclusion of all children in a common education framework. During the **1980s** and **1990s** there was a considerable decline in the number of children in special education institutions and a gradual increase in the proportion of children identified as having special educational needs (SEN) (House of Commons Education and Skills Committee, 2006:11).

The *World Declaration on Education for All*, adopted in Jomtien, Thailand (**1990**), aimed to provide education for all by the year 2000. The overall vision of the Declaration was identified as "universalizing access to education for all children, youth and adults, and promoting equity" through identifying "the barriers that prevent accessing educational opportunities and the resources needed to overcome those barriers (UNESCO, 2009:8).

European Union Council accepted the *Resolution on Concerning Integration of Children and Young People with Disabilities into Ordinary Systems of Education* (90/C 162/02) on May 31, **1990**. The tendency among all Member States' education policies is the integration of all children with disabilities into ordinary systems of education (mainstream education). The priority of these policies should be "full integration into the system of mainstream education". Special education schools are viewed as "complementary to the work of the ordinary education systems". Children with special educational needs and their families have the right to choose among several educational choices depending on information about the available options. Children with special educational needs in mainstream schools should benefit the teaching methods developed in special education schools (European Union, 1990).

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The *United Nations Standard Rules on the Equalization of Opportunities for Persons with Disabilities* (**1993**) Rule 6 claimed that the education of people with disabilities is an integral part of the education system which involves national educational planning, curriculum development and school organization. Adequate accessibility and support services should be provided to meet the specialized needs of people with disabilities (United Nations, 1993).

The *World Education Forum* was held in Dakar, Senegal, in April **2000**, a decade after the World Declaration on Education for All, to review the progress made since 1990. The purpose set out in the Forum was *to achieve quality basic education for all by 2015* through the realization of six educational goals[3]. The term *all* covers "the poor and the disadvantaged, including working children, remote rural dwellers and nomads, ethnic and linguistic minorities, children, young people and adults affected by conflict, HIV and AIDS, hunger and poor health, and those with disabilities or special learning needs" (UNESCO, 2009:8).

In United Kingdom, the *Special Educational Needs and Disability Act* (SENDA) **2001**, and the **2004** SEN Strategy *Removing Barriers to Achievement* aimed to improve the existing SEN framework that was established with the legislations enacted since the Warnock Report, to maintain special educational services for children with special needs in mainstream education environments and to provide access to the curriculum and educational facilities (House of Commons Education and Skills Committee, 2006:12, SENDA, 2001).

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[3] Education for All (EFA) goals:
1. Expanding and improving comprehensive early childhood care and education, especially for the most vulnerable and disadvantaged children;
2. Ensuring that by 2015 all children, particularly girls, children in difficult circumstances and those belonging to ethnic minorities, have access to and complete free and compulsory primary education of good quality;
3. Ensuring that the learning needs of all young people and adults are met through equitable access to appropriate learning and life-skills programmes;
4. Achieving a 50 per cent improvement in levels of adult literacy by 2015, especially for women, and equitable access to basic and continuing education for all adults;
5. Eliminating gender disparities in primary and secondary education by 2005, and achieving gender equality in education by 2015, with a focus on ensuring girls' full and equal access to and achievement in basic education of good quality;
6. Improving all aspects of the quality of education, and ensuring excellence of all so that recognized and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills (UNESCO, 2009:27).

European Union Council *Resolution on Equal Opportunities for Pupils and Students with Disabilities in Education and Training* (2003/C 134/04) accepted on May 5, **2003** includes objectives regarding education of children with special educational needs through inclusion. The full integration of children with special needs in society through appropriate education is essential, where *appropriate* means a school system which is adapted to special education needs of students. The necessity of providing supportive services and technical assistance to these students has been also addressed. Through proper information and guidance, these students and their parents should enjoy their right to choose the appropriate type of education. In-service training has been claimed to be essential for teachers who are working in the area of special education (European Union, 2003).

Children with disabilities' right to education is preserved by the Article 24 in the United Nation's *Convention on the Rights of Persons with Disabilities* (adopted in **2006,** entered into force in **2008**) which impose states to develop an inclusive education system at all levels. States should ensure that these children should not be excluded from the general education system on the basis of disability. They should be provided equal opportunities in accessing an inclusive, quality and free primary and secondary education and supportive services in line with their individual requirements to facilitate their effective education. The Convention secures people with disabilities' right to health sevices through the Article 25. It is claimed that these services should be provided as close as possible to people's own communities (UNCRPD, 2006:16-18).

The *Council of Europe Disability Action Plan* **2006-2015** emphasizes the significance of education in ensuring social inclusion and independence for all, including people with disabilities. Integrating people with disabilities in general education system is claimed to be essential for the benefit of both people with and without disabilities. This plan assumes that children without disabilities will develop an understanding of human diversity through receiving education alongside with their peers with disabilities (Council of Europe, 2006:16).

United Nations Educational, Scientific and Cultural Organization (UNESCO) published *Policy Guidelines on Inclusion in Education* in **2009** by emphasizing the significance of "clear, unified national strategies to include all learners" in achieving the Education for All (EFA) goals by 2015. The objectives of these guidelines have been defined as "to assist countries in strengthening the focus on inclusion in their strategies and plans for education,

to introduce the broadened concept of inclusive education and to highlight the areas that need particular attention to promote inclusive education and strengthen policy development" (UNESCO, 2009:4, 7).

A decade after the adoption of six Education for All goals in the World Education Forum in Dakar, UNESCO have published an *EFA Global Monitoring Report* in **2010**, which is the latest among the reports which were published every year starting from 2002. This report acknowledged that although much has been achieved in many countries in terms of increase in enrollment/attendance in primary education, there are still children whose education rights are denied to them, especially in poor countries. This report recommends that "countries must develop more inclusive approaches, linked to wider strategies for protecting vulnerable populations and overcoming inequality" (UNESCO, 2010: 1).

2.2.2 Legal Dimensions of Inclusive Education in Turkey

In Turkey, the right to education has been secured with the 42nd article in the *Constitution of the Turkish Republic*, which was accepted on October 18, **1982**. It is claimed that primary education is compulsory for every Turkish citizen and no one can be deprived of the right to education (Sucuoğlu and Kargın, 2006:45). The legislative context of inclusive education in Turkey is outlined in Table 2.4.

In 1980s, several laws related to special education came into force. In **1983**, *Children with Special Educational Needs Law* (Law No. 2916) was enacted. This law is the initial step for the regulation of these children's right to education. This law is significant in being the first to address the issue of education of children with special needs through inclusion. In **1991**, *First Special Education Council* decided to promote inclusive educational programmes in schools (Sucuoğlu and Kargın, 2006:45-47).

The most comprehensive regulation regarding special education and inclusion is *the Decree Law on Special Education No. 573* which was enacted in **1997** and which involves the principles of special education regarding people with disabilities (Sucuoğlu and Kargın, 2006:47). The aim of this law is to regulate the principles for enabling the individuals with special educational needs (SEN) exercise their right to general and vocational education in accordance with general objectives and basic principles of Turkish National Education. This

Decree Law involves the individuals with special educational needs (SEN), the educational services provided for them, and the schools, institutions and programmes that will provide these services (M.E.B., 1997).

Table 2.4 Legal dimensions of Inclusive Education in Turkey

Year	Legislations and Events
1982	Constitution of the Turkish Republic
1983	Children with Special Educational Needs Law (Law No. 2916)
1991	First Special Education Council
1997	Decree Law on Special Education No. 573
2000	Initial version of Special Education Services Regulation
2001	Guidance and Psychological Counseling Services Regulation
2003	Initial document of Regulation of Primary Education Institutions
2004	Initial Educational Practices through Inclusion Circular (2004/7)
2005	Law on People with Disabilities with No. 5378
2006	Entry of the successive Special Education Services Regulation into force.
2006	Revised document of Regulation of Primary Education Institutions
2006	Duties and responsibilities of Ministry of National Education General Directorate of Special Education Guidance and Counselling Services has been published.
2006	17th National Education Advisory Committee
2006	Regulation on Disability Standards, Classification and Medical Board Reports Delivered to People with Disabilities
2006	Educational Evaluation and Assessment Services Circular
2008	Recent Educational Practices through Inclusion Circular (2008/60)
2009	Ministry of National Education published Inclusion Module.
2009	Two recent revisions made to the Special Education Services Regulation.

In **2001**, *Guidance and Psychological Counselling Services Regulation* has been enacted. The mission of *Guidance and Research Centers* have been defined in this regulation as the implementation of guidance and psychological counselling services in educational institutions in an efficient way, the assessment of children with special educational needs (SEN) and the provision of support services for these children besides administrators, teachers and parents (M.E.B., 2001).

Inclusion has been handled as a separate section in the *Special Education Services Regulation* (Sucuoğlu and Kargın, 2006:65). The initial version of this document came into force in **2000** and has been repealed in May 31, **2006** with the entry of the successive regulation which has been finalized with two recent revisions in **2009**. The aim of this document is to regulate the principles which secure the rights of individuals with special

educational needs to general and vocational education. In Article 5, the aim of special education is identified as promoting social participation, cooperativeness, productiveness, well-being, and independent living of individuals with special educational needs (SEN). The provision of appropriate educational programmes, special methods, staff, tools and materials is essential in order to enable these individuals to continue their education in line with their educational needs, capacities and interests (M.E.B., 2006a).

The most comprehensive law regarding the rights of people with disabilities is the *Law on People with Disabilities with No. 5378*, which is enforced in July 1, **2005**. The aim of this law is to provide solutions regarding their health, education, rehabilitation, employment, nursing and social security, to enable their participation in all aspects of society by taking preventive measures and by eliminating disabling barriers in the environment. Their right to education has been secured by Article 15. It is claimed that education of people with disabilities cannot be precluded for any reason. They are provided equal educational opportunities in integrated environments through considering their special conditions and unique differences (Başbakanlık ve Özürlüler İdaresi, 2005).

In August 28, **2003**, Ministry of National Education issued the *Regulation of Primary Education Institutions*, which has been revised several times. One of the revisions, dated May 02, **2006**, is significant for the promotion of inclusive education in primary schools. In this version, the necessity of inclusive education practices, individualized education programme and resource room for individuals with special educational needs have been clarified. It is claimed that children with special educational needs can receive education either in regular classrooms together with their peers or in special education classrooms with the provision of supportive services in the same institution (M.E.B., 2006b).

In August 31, **2006**, an instruction regarding the *duties and responsibilities of Ministry of National Education General Directorate of Special Education Guidance and Counselling Services* has been published. This directorate was established in 1992 depending on decisions of Law No. 3797 regarding the organization and duties of Ministry of National Education. There are three departments under the directorate one of which is *Special Education Department*. There are five branch offices which are subordinate to Special Education Department. These are (1) Programme Development and Inclusive Education, (2) Education of People with Physical Disabilities, (3) Education of People with Mental

Retardation, (4) Education of People with Social and Emotional Difficulties and (5) Education of People with Gifts and Talents. In Article 25, the responsibilities of Programme Development and Inclusive Education, regarding individuals with special educational needs who receive education through inclusion in general education institutions, are clarified (M.E.B., 2006c).

The resolution of *17th National Education Advisory Committee,* which was held in **2006**, involves decisions regarding the significance of making adaptations in the organizational environment in schools practicing inclusive education (T.T.K.B., 2008).

In order to clarify the principles in laws and legislations regarding inclusive education practices, an initial circular has been enacted in February 9, **2004** with No: 2004/7. This document has been overruled with the recent *Educational Practices through Inclusion Circular* which has been put into force in September 2, **2008** with No: 2008/60. This last document involves statements in order to resolve the uncertainities regarding inclusive education practices and the measures to be taken (M.E.B., 2008).

In **2009**, the Ministry of National Education has prepared the *Inclusion Module* which is an education material providing a comprehensive information on *Inclusive Education* within the framework of Reinforcing Vocational Training and Education System Project. The objectives of inclusive education are identified as to ensure children with special education needs (SEN) become aware of their own reality, promote their capabilities, live independently, recognize school rules and appropriate behavior, communicate with their peers without special needs who are also expected to develop positive attitudes towards themselves in the same environment. This document emphasizes the education right of every individual with special educational needs with their peers in the same environment on the basis of the idea that every children can learn and can be educated (M.E.B., 2009:4, 5).

There are different ways in achieving inclusion in education of children with special needs. In the Article 20 of the *Decree Law on Special Education No. 573*, two ways of inclusion have been specified. The first is the education of individuals with special educational needs, who are eligible to receive education in environments with their peers without disabilities, in a pre-primary, primary and secondary public or private school where supplementary classrooms are established, special tools and education materials are provided and other

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preventive measures are taken in order to provide supporting services for these children. There are also children who are required to be educated in separate environments depending on their health and developmental conditions. In this case, the second type of inclusion is considered which is implemented through the education of these children in special education classrooms in the same institution (M.E.B., 1997).

In the *Special Education Services Regulation*, Article 23 states that individuals with special needs continue their education through either full time or part time inclusion in which they participate in some courses in the same environment with their peers or in extracurrricular activities. In primary education level, class size includes *either two children with special educational needs in overall 25 students or one child with special educational needs in overall 35 children* (M.E.B., 2006a).

Although general tendency in inclusive education practices is part time or full inclusion of children with special education needs in general education environments together with their peers without disabilities, the possibility of the opposite attitude is also implied in this regulation in Article 23. "Normally" developing children can also attend to special education schools -which implement inclusive education practices- either in the same classrooms with their peers with special educational needs or in a separate classroom in the same institution. Class sizes in these schools are *five students with special educational needs among maximum 14 students* (M.E.B., 2006a).

The legal dimensions of inclusive education in Turkey have been summarized beginning from 1980s until today. The terminology used in Turkish legislations on inclusive education has been identified below:

In the *Decree Law on Special Education No. 573*,
- *The individual with special educational need* is defined as the individual whose performance differs significantly from the expected level of her/his peers depending on several reasons, individual characteristics and educational capacities.
- *Special education* is defined as the education practiced in order to fulfill the educational needs of individuals with special educational needs through the provision of specially trained staff, and specially developed educational programmes and methods in environments compatible with their limitations and characteristics.

- *Inclusive education* refers to educational environments that are improved to ensure the individuals with special educational needs have social interaction with other individuals mutually and realize their educational objectives at the highest level (M.E.B., 1997).

In the *Special Education Services Regulation,* Article 23 defines;
- *Education through inclusion* as a special education practice which is based on principles that enable children with special educational needs to receive education with their peers in public or private pre-primary, primary and secondary education institutions through the provision of special education services (M.E.B., 2006a).

In the *Law on People with Disabilities No. 5378*,
- *People with disabilities* are defined as individuals who have limitations in adapting themselves to social life and in meeting their daily needs depending on an innate or a subsequent loss of functioning in one or more areas such as physical, mental, emotional, sensory and social capabilities to varying degrees and therefore demand services regarding protection, care, rehabilitation, consultance and support (Başbakanlık ve Özürlüler İdaresi, 2005).

In the *Inclusion Module* which is published in 2009,
- *Inclusion* is defined as a special education practice which is implemented within the framework of an education programme (M.E.B., 2009:5).

2.2.3 Process-based and Student-centered Principles of Inclusive Education in Turkish Legislations

The objectives and principles of inclusive education in international and national legislations described so far includes a *process-based and student-centered* understanding. Every adaptation in the environment is made according to the child's condition, educational needs and performances in order to maximize her/his capabilities during the process of education through inclusion. In this understanding, the child is not forced to adapt to the environmental conditions and is not disabled by the limitations in the education environment. Rather, the child's education environment is adapted to meet the special requirements of the child. This self-environment interaction is the prevailing view which is emphasized several times

throughout this thesis and the basis of the *broadened understanding of inclusion in education environments*.

In Turkish legislations, the principles of inclusive education practices which are based on *process-based and student-centered understanding of inclusion* are:

a. Choosing the most appropriate education environment for children with special educational needs

b. Organizational adaptations in the education environments

c. Individualized Education Programme (IEP)

d. Collaborative team study

e. School-centered supportive services

f. Adaptations in the physical education environment

a. Choosing the Most Appropriate Education Environment for Children with Special Educational Needs

The initial step in choosing the most appropriate education environment for children with special educational needs is a two-stage assessment process. The first stage is the medical assessment process, which is carried out by health care facilities depending on a standardized classification system. The second stage is the educational assessment process carried out by Guidance and Research Centers.

Initially, the standardized classification system for measuring disability has been referred in the *Law on People with Disabilities No. 5378*. Article 5 claims that classifications and assessment regarding people with disabilities are prepared according to international disability classification standards (Başbakanlık Özürlüler İdaresi, 2005).

The *Regulation on Disability Standards, Classification and Medical Board Reports Delivered to People with Disabilities* was enacted in July 16, 2006 in order to determine the standards in the fields of health, education and rehabilitation services regarding classifications and definitions related to people with disabilities. This regulation involves Medical Board Reports for people with disabilities, related health facilities authorized to deliver these reports and classification standards regarding people with disabilities. In Article 5, it is claimed that the studies related to the classification of disabilities are based on the

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International Classification of Functioning, Disability and Health (ICF) which has been developed by World Health Organisation (WHO) in order to develop a common framework in the field of health care services. This classification system is used to provide service to people with disabilities in the fields of rehabilitation, education and employment. In Article 9, it is claimed that individuals, with a rate of minimum 40% loss of bodily functions, should apply to Provincial Directorate of National Education with their Medical Board Reports if they demand special education services (Başbakanlık Özürlüler İdaresi, 2006).

In *the Special Education Services Regulation,* Article 7 involves issues regarding the assessment and evaluation of children with special educational needs. In this period, individuals' developmental characteristics, academic performances and educational needs are identified in order to decide the least restrictive environment (LRE) and the most appropriate special education services. The assessment and evaluation of children with special educational needs is carried out by Special Education Evaluation Committee that is established in Guidance and Research Centers -which is subordinate to Ministry of National Education- through objective, standardized tests and psychological measurement tools in line with the individuals' characteristics. In educational evaluation, Medical Board Reports of the individuals with disabilities, cognitive, physical, psychological and social developmental characteristics, academic performances and special needs are considered. Article 11 and 12 involve rules regarding the orientation and placement of individuals into the suitable education environment. Special Education Services Committees are established in Directorates of National Education in provinces and counties in order to monitor the implementation of special education services in schools (Article 14) (M.E.B., 2006a).

The *Programme Development and Inclusive Education Office*, which is subordinate to Special Education Department of the Ministry of National Education General Directorate of Special Education Guidance and Counselling Services, is responsible for identifying appropriate education environments and planning the education of children with special educational needs (M.E.B., 2006c).

The resolution of *17th National Education Advisory Committe* emphasizes the necessity of developing measurement tools for the assesment of children with special educational needs (T.T.K.B., 2008).

In the *Educational Evaluation and Assessment Services Circular* which was published in June 27, 2006 the criteria for orienting children with special educational needs to the most appropriate educational environment are determined according to the international classification standard. Individuals with cognitive capacities below 70 are claimed to have special educational needs and oriented to educational environments through the consideration of Least Restrictive Environment (LRE) principle. Individuals with cognitive capacities between 50-69 are claimed to have mild cognitive disabilities and are oriented to the general education classrooms, special education classrooms of the general education schools which practice inclusive education, or primary special schools respectively. Individuals with cognitive capacities between 35-49 are claimed to have moderate cognitive disabilities, individuals with cognitive capacities between 20-34 are claimed to have severe cognitive disabilities and individuals with cognitive capacities between 0-19 are claimed to have very severe cognitive disabilities. These individuals are oriented to the training and application schools (M.E.B., 2006d).

In the *Inclusion Module*, the criteria for the selection of the child in inclusive education system are determined as below:
1. The child should not have multiple disabilities.
2. The child should be diagnosed at an early age.
3. The family should be likely to cooperate and to receive training.
4. The child should be equipped with the appropriate special devices if necessary.
5. If the child has a mental learning disability, its level should be mild or moderate (M.E.B., 2009:5).

b. The Significance of Organizational Adaptations in the Education Environments

In the *Special Education Services Regulation*, Article 6 emphasizes the necessity of organizational adaptations in educational objectives, contents, teaching and evaluation processes which are provided through the consideration individual performances. According to Article 23, physical, social and psychological environmental adaptations are realized in line with individuals' special needs and capabilities (M.E.B., 2006a).

The *Inclusion Module* emphasizes the necessity of (1) supportive services and adaptations in organizational environment in the school and (2) preparing teachers, students with and

without special educational needs, school administrators and families for the new education system (M.E.B., 2009:5).

The *Programme Development and Inclusive Education Office*, which is subordinate to Special Education Department of the Ministry of National Education General Directorate of Special Education Guidance and Counselling Services, is responsible for improving (1) educational models, tools and techniques for assessment and evaluation, and (2) professional competence of teachers in terms of inclusive education through publishing manuals regarding special education methods and techniques, determining service training needs, preparing the drafts of in-service training programmes, supervising teachers regarding the implementation of education programmes (M.E.B., 2006c).

The resolution of *17th National Education Advisory Committe* involves principles regarding the adaptations in the education environments such as providing (1) supportive special education services in inclusive education classrooms, (2) minimum 180-hours service training for primary education teachers about children with special educational needs and special education strategies, (3) regulations in programmes developed for teachers' preservice training, (4) preservice training on special education for regular classroom teachers and (5) providing special education courses in higher education curriculum in order to facilitate intergrated special education practices (T.T.K.B., 2008).

c. The Significance of Individualized Education Programme

In the *Decree Law on Special Education No. 573*, Article 12 claims that the education of children with special educational needs is realized in line with *individual education plans* prepared at each type and level in schools and institutions together with their peers through the use of appropriate methods and techniques (M.E.B., 1997).

In the *Special Education Services Regulation*, Article 69 clarifies the principles regarding individualized education programme (IEP) which is prepared in line with children's developmental characteristics, educational performances and special educational needs for the realization of educational goals and the provision of special education services. In Article 72, the participants who are responsible for the development of an individualized education programme are identified as school principal or vice-principal as the president of the

committee, a visiting special education teacher, an advisor, a teacher responsible for the preparation of an education programme, student's classroom teacher and other courses' teachers, student's parents and the student with special educational needs (M.E.B., 2006a).

In Turkey, the responsible body for the provision of Individualized Education Programmes (IEP) in the Ministry of National Education General Directorate of Special Education Guidance and Counselling Services is the *Programme Development and Inclusive Education Office*, which is subordinate to Special Education Department (M.E.B., 2006c). In addition to this, depending on the declaration of the *Educational Practices through Inclusion Circular Nr:2008/60,* Individualized Education Programme (IEP) Development Unit will be established in schools in order to prepare Individualized Education Programme for students with special educational needs (M.E.B., 2008).

The *Inclusion Module* also emphasizes the implementation of a child-centered education programme which is adapted to each individual with special educational needs (M.E.B., 2009:5).

d. The Significance of Collaborative Team Study

In the *Special Education Services Regulation,* Article 6 emphasizes the necessity of *collaborative team study* which is carried out with institutions that provide rehabilitation services, and with parents who are incorporated into each dimension of special education period besides being merely informed about the issue. Article 23 claims that all participants in the schools, such as school staff, students and their parents are informed about individuals with special educational needs (M.E.B., 2006a).

According to the *Educational Practices through Inclusion Circular No. 2008/60,* general education teachers, special education teachers, advisors, administrators and other educators will share the responsibility for the education of children with special educational needs who receive education through inclusion in either a general (regular) classroom with their peers or a special education classroom. Necessary measures will be taken by school administration in order to enable children with special educational needs to participate in curricular and extracurricular social and cultural activities (M.E.B., 2008). The *Programme Development*

and Inclusive Education Office is the responsible body for the provision of support and education services to parents (M.E.B., 2006c).

The *Inclusion Module* emphasizes the necessity of a collobarative study for the decision-making process in order to choose the most appropriate environment for children with special educational needs through the participation of the family, the school and the guiding team in the school (M.E.B., 2009:5).

e. School-Centered Supportive Services

In *the Special Education Services Regulation,* Article 6 emphasizes the significance of the issue of inclusion for the benefit of children with special educational needs and claims that special education services are delivered to these individuals without separating them from their social and physical environments as much as possible. Article 23 claims that supporting services can be provided through assistance either in the classroom or in the resource room (M.E.B., 2006a).

The *Inclusion Module* asserts that the provision of special services should be planned according to individuals' educational needs rather than their limitations and these services should be school-centered (M.E.B., 2009:5).

f. Adaptations in the Physical Education Environment

In addition to the principles above, the principle of physical adaptations in education environments is significant in the implementation of inclusive education in terms of *process-based and student-centered understanding of inclusion*. In Turkish legislations, the requirements for the adaptations in physical environments of primary schools are given in details. These requirements are handled in this part. The information derived from these documents is elaborated and differentiated in a systematic way in Chapter 5, in order to ensure architects access to principles and spatial requirements of an inclusive primary education environment during the programming stage of design process.

In the *Special Education Services Regulation*, Article 88 emphasizes the significance of physical environments in education through inclusion. Some of the required physical environments in schools are identified as guidance and counselling services room, resource

room, monitoring room, individual education room, rest room, play room, medical treatment room, family training room, visual arts and music room, practice room, multipurpose room, hydrotherapy pool, library, indoor and outdoor garden, physical education hall, performing arts and theatre halls, auditory, speech and language laboratories, physiotheraphy and rehabilitation hall and ateliers. In addition to these spaces, it is claimed that additional prevention measures are taken in common spaces in order to enable mobility of wheelchairs. Ramps and handles are also considered in the environment. Sound insulation is claimed to be essential for students with hearing impairments. Article 28 regulates the principles regarding the use of resource rooms (M.E.B., 2006a).

The *Educational Practices through Inclusion Circular No. 2008/60* acknowledges that resource rooms will be opened in schools for individual and group study for children with special educational needs. Physical standards (heating, illumination, size, hygiene etc.) of special education classrooms and resource rooms will be accessible and appropriate for education. Pre-primary education materials and equipments used in rehabilitation centers will be utilized in special education classrooms and resource rooms (M.E.B., 2008).

In the appendix of the *Educational Practices through Inclusion Circular No. 2008/60*, there are recommendations to teachers for the arrangement of the education environment for children with special educational needs (M.E.B., 2008). These recommendations, which have implications for the design of inclusive education environments, are classified according to children's limitations.

Students with Visual Impairments:
1. These students should be seated in the front desks in order to enable their mobility.
2. The location of their desks should be determined in such a way that the sun beams come from the rear side.
3. The parts of the school and the classrooms should be introduced in order to enable their independent movement, labels with relief scripts and symbols should be fixed wherever possible.
4. The location of furnishings and equipments in the classroom should not be changed, otherwise the children should be informed.
5. Course materials should be prepared with large fonts for students with partial sight.

6. Tools and equipments that support these students' learning should be used.

Students with Hearing Impairments:

1. The students should be seated in the front desks in order to see the teacher and the board easily and to enable eye contact between the teacher and the student.
2. Noise should be controlled in the learning environment.
3. Tools and equipments that support these students' learning should be used.
4. Students' participation in all of the activities should be enabled.
5. These students should be seated in order to see their friends' faces during group study.
6. Written and visual clues should be used during the courses.

Students with Orthopedic Impairments:

1. The classroom should be on the ground floor level. Arrangements regarding students' independent movement and mobility should be provided both in the classrooms and in the school.
2. These students should be seated in an appropriate place in order to facilitate their access.
3. These students should be enabled to use supportive special tools and materials which will facilitate their independent mobility such as wheelchairs, adaptable pencils, etc.

Students with Speech and Language Impairments:

1. Eye contact should be kept between the students and the teachers.
2. Students should be encouraged to use tools and materials that facilitate their communication such as computer.

Students with Learning Difficulties and Mental Retardation:

1. These students should be seated in the front desks in order to enable them to see the teacher and the board easily.
2. The rules in written and visual format should be fixed onto the classroom panel.
3. Group study should be encouraged among these students.
4. Different methods should be used in order to promote these students' learning such as research projects, classroom presentations and group study.
5. Stimuli which prevent students learning such as excessive noise and light should be minimized.

6. Students should be allowed to use technological tools such as calculators and computers in order to enable them to understand the topic during the course.

Students with Attention Deficit Hyperactivity Disorder

1. These students should be seated in the front desks at the side of the wall.
2. Students should be allowed to use computer and internet during preparing their homework and voice recorder during the course if necessary.
3. The materials which distract students' attention should be located at the back of the classroom.
4. Special corners for private and group study and for awarding should be arranged inside the classrooms.
5. The rules in written and visual format should be fixed onto the classroom panel.
6. Students should be encouraged to study in groups.
7. In order to control excessive activities of these children, relaxation exercises should be arranged at regular intervals in the classroom.

Students with Autism Spectrum Disorders

1. The classroom and other spaces in the school should be introduced to beginners.
2. These students should be seated in the front desks.
3. The rules in written and visual format should be fixed onto the classroom panel.
4. The students should be encouraged to keep eye contact with the teacher, to develop the skills of conforming simple instructions.
5. The excessive noise in the classroom should be minimized.
6. Teachers should use picture cards and photographs in order to promote these students' understanding.
7. Social interaction of these students should be encouraged outside the classroom environment.
8. Family members of the students can be allowed to wait outside the classroom during the courses.
9. These students should be encouraged to play with their peers during small group studies or extracurricular activities.
10. Objects which can cause obsessive behaviors can be hidden during the courses (M.E.B., 2008).

There are also recommendations to teachers for the spatial organization of additional spaces which will support students' learning and interaction with their peers. Resource rooms are arranged for providing supportive education services for children with special educational needs and children with gifts and talents. In these rooms, special education teachers, visiting teachers, regular classroom teachers and branch teachers provide additional education services in line with students' Individualized Education Programmes (IEP) which are prepared depending on students' academic performances, capabilities and individual characteristics. These extra sevices should be provided individually or in groups with maximum of six students during school hours. The issues to be considered in the arrangement of resource rooms are classified as below:

1. The room should be arranged in order to provide secure and comfortable mobility.
2. Ventilation, illumination, sound insulation and spatial arrangement should enable to create an effective education environment.
3. The room should be located far from noise sources.
4. The furnishings and equipments inside the room should be developmentally and age-appropriate.
5. The education materials should be appropriate in terms of students' age, performance and limitations (These materials are listed in the appendix of the curricular) (M.E.B., 2008)

The *Inclusion Module* emphasizes the necessity of adaptations in physical education environments according to children's special needs which will enable them to participate in educational activities easily and listed the requirements of the environments as below:

1. Resource rooms should be provided where children can receive supportive education services.
2. The arrangements regarding visual and spatial organization of the classroom, illumination, classroom area and storage should be designed consciously.
3. The students should be informed about the arrangements in the spatial organization of the classroom, they should be involved in decision-making process, and should be allowed enough time for adapting to the changes in the environment.
4. The students should be seated in clusters for the benefit of children with social and behavioral difficulties.

5. There should be enough storage space in the classroom for specialized devices of children with special educational needs.

6. Lifts and ramps should be provided with appropriate scale and dimensions for people with orthopedic difficulties. If this is not possible, these students should attend to classrooms which are located on the ground floor.

7. Recess bells should be equipped with visual sensory systems (light, etc.) for the students with hearing impairments.

8. The title of the spaces for common use and the classrooms should be written in relief for students with visual impairments.

9. Training halls should be provided for students, who are not eligible to participate in visual arts, music and physical education courses depending on their functional limitations, in order to enable them to participate in activities which can help them to express themselves and display their various skills freely.

10. Additional supportive tools and equipments should be provided in order to enable students' concept acquisition.

11. Students should be encouraged to use educational materials which are developmentally appropriate for each children with special educational needs (M.E.B., 2009:11-13).

2.2.4 Statistical Data Regarding Inclusive Education in Turkey

Living standards of people with special needs and quality of services offered to them in the fields of health, education, rehabilitation, employment are important Human Development indicators for the countries in the world. Collecting statistics about people with disabilities is essential in developing policies for providing the necessary services for these people. However, in Turkey, until 2002, depending on the lack of registration system regarding the population of people with disabilities, there was a lack of quantitative and qualitative information about these people. In 2002, for the first time, a survey (Turkey Disability Survey 2002) was carried out by the State Institute of Statistics in cooperation with the State Planning Organization and the Presidency of Administration for Disabled People, to reveal necessary quantitative and qualitative information regarding people with disabilities in Turkey. According to the survey, the proportion of people with disabilities in the overall population is 12.29% (DİE, 2004:3,5).

In Europe, there are differences between countries in terms of educating students with special educational needs in inclusive and segregated environments. The percentage of students with special educational needs who receive education in segregated education environments compared to the overall student number in compulsory education ranges between 0,01% and 5,1% (EU average: 2,1%) (Commission of the European Communities, 2009:6). These statistical data are significant for policy makers and researchers in order to understand the percentange of students who are not eligible to benefit from the services of inclusive education (for whom the least restrictive environment is special education institutions).

In this study, the percentage of students with special educational needs in public primary education who attend general education and special education in Turkey, has been elicited depending on the up-to-date numerical data provided from Ministry of National Education and General Directorate of Special Education. These percentages are important for both monitoring the move towards inclusion and revealing the quantity of individuals who demand quality special services. It should be kept in mind that there may be students in general education who require special support, but whose special needs are not identified yet.

According to the results of the last population census, as of December 31, 2009, the overall population of Turkey is 72.561.312 (TUİK, 2010). According to the National Education Statistics, in the academic year 2009-2010, 14,5% of the overall population attend regularly primary education institutions. 97,6% of these students attend public primary schools, whereas 2,4% attend private primary schools (Table 2.5).

Table 2.5 Number of institutions and students in *primary education* in Turkey

Type of primary education institutions	Number of institutions	Percentage of institutions	Number of students	Percentage of students
Primary Schools	33.309	100%	10.526.695	100%
Public Primary Schools	32.430	97,4%	10.274.728	97,6%
Private Primary Schools	879	2,6%	251.967	2,4%

(Adapted from M.E.B., National Education Statistics Formal Education 2009-2010, Official Statistics Programme, Ankara, 2010, p. 53)

There are two types of institutions among public primary schools. First type, which is subordinate to General Directorate of Primary Education of Ministry of National Education, includes general education schools where inclusive education practices are aimed to be

widespread. The proportion of students attending the first type is 99,8%. The second type, which is subordinate to General Directorate of Special Education Guidance and Counselling Services of Ministry of National Education, includes public primary special education institutions. The proportion of students attending public primary special education is 0,2 % compared to the overall number of students who attend public primary schools in Turkey (Table 2.6).

Table 2.6 Number of institutions and students in *public primary education* in Turkey

Type of primary education institutions	Number of institutions	Percentage of institutions	Number of students	Percentage of students
Public Primary Schools	32.430	100%	10.274.728	100%
General Directorate of Primary Education (General Education)	32.146	99,1%	10.257.169	99,8%
General Directorate of Special Education Guidance and Counselling Services (Special Education)	284	0.9%	17.559	0,2%

Adapted from M.E.B., National Education Statistics Formal Education 2009-2010, Official Statistics Programme, Ankara, 2010, p. 53.

The number of students who attend private primary schools is 2,4% of the overall number of students who attend primary education. Among the private institutions, the percentage of students in general education is 98,4%, whereas the percentage of students in special education is 1,6% (Table 2.7).

Table 2.7 Number of institutions and students in *private primary education* in Turkey

Type of primary education institutions	Number of institutions	Percentage of institutions	Number of students	Percentage of students
Private Primary Schools	879	100%	251.967	100%
Private General Education	734	83,5%	247.850	98,4%
Private Special Education	145	16,5%	4.117	1,6%

Adapted from M.E.B., National Education Statistics Formal Education 2009-2010, Official Statistics Programme, Ankara, 2010, p. 53.

According to the *Ministry of National Education General Directorate of Special Education Guidance and Counselling Services* 2009-2010 statistical data, 71.142 primary school students with special educational needs attend general education classrooms and 15.712 students attend special education classrooms in public primary general education schools (M.E.B., 2010b). There are 17.559 primary school students who attend special education

classrooms (M.E.B., 2010a:53). According to the information above, the total number of students with special educational needs in public primary schools is 104.413, 1% of overall students who attend public primary institutions in Turkey (Table 2.8).

Table 2.8 The ratio of *students with special educational needs* to the overall number of students in *public primary education* in Turkey

Students in Public Primary Schools	Number of students	Percentage of students
Total Number of Students in Public Primary Schools	10.274.728	100%
Students with Special Educational Needs in Primary Education	104.413	1%

Adapted from M.E.B., National Education Statistics Formal Education 2009-2010, Official Statistics Programme, Ankara, 2010, p. 53 and M.E.B., General Directorate of Special Education Guidance and Counselling Services, Statistics, 2010.

Among the *students with special educational needs* in public primary education, 16,8% attend special education institutions, whereas the majority (83,2%) attend general education institutions (Table 2.9).

Table 2.9 The ratio of *students with special educational needs* in public primary education who attend either *special education* or *general education* institutions in Turkey

Students with Special Educational Needs in Public Primary Schools	Number of students	Percentage of students
Total Number	104.413	100%
Special Education Primary Schools (General Directorate of Special Education Guidance and Counselling Services)	17.559	16,8%
General Education Primary Schools (General Directorate of Primary Education)	86.854	83,2%

Adapted from M.E.B., National Education Statistics Formal Education 2009-2010, Official Statistics Programme, Ankara, 2010, p. 53 and M.E.B., General Directorate of Special Education Guidance and Counselling Services, Statistics, 2010.

Among the *students with special educational needs* in general primary education, 18,1% attend special education classrooms, whereas the majority (81,9%) attend general education classrooms (Table 2.10).

Table 2.10 The ratio of *students with special educational needs* in public general primary education who attend either *special education* or *general education classrooms* in Turkey

Students with Special Educational Needs in Public General Primary Education	Number of students	Percentage of students
Total Number	86.854	100%
Special Education Classrooms	15.712	18,1%
General Education Classrooms	71.142	81,9%

Adapted from M.E.B., National Education Statistics Formal Education 2009-2010, Official Statistics Programme, Ankara, 2010, p. 53 and M.E.B., General Directorate of Special Education Guidance and Counselling Services, Statistics, 2010.

The number of students with special educational needs in general education classrooms will increase, if students with unidentified learning difficulties, and the other categories of students who are gifted and talented, who are culturally and linguistically diverse and whose success is jeopardized a variety of sociocultural and socioeconomic factors are considered. This fact reveals the urgency of taking preventive measures in general education system in public primary schools and providing all the students with special educational needs extra services in order to enable them to enjoy their right to education and in order to promote inclusive education system in Turkey.

2.3 An Overview on the Issue of Inclusion in Architecture

In this section, the definition, mission and strategies of Universal Design, its prevalence worldwide, its status in international legislations and regulations, and the development of its principles are described. The limits and differences in understanding the notion of inclusion in Universal Design literature, conceptual ambiguities, unclear and insufficient explanations regarding inclusion are clarified.

2.3.1 Legal Dimensions of Universal Design

The legal dimensions already covered until this section with regard to the rights of people with disabilities establish the ground for the development of Universal Design and its principles. In this section the legislations concerning directly the issue of accessibility and inclusion in the built environment are defined (Table 2.11).

Table 2.11 Legal dimensions of Universal Design

Country	Year	Legislations and Events
USA	1991	ADA Accessibility Guidelines
Worldwide	1993	UN Standard Rules on the Equalization of Opportunities for Persons with Disabilities
UK	1995	Disability Action Plan
UK	2001	Special Educational Needs and Disability Act (SENDA)
Worldwide	2001	Council of Europe ResAp (2001)1 (Tomar Resolution)
Worldwide	2006	UN Convention on the Rights of Persons with Disabilities (entered into force in 2008)
Worldwide	2006-2015	Council of Europe Disability Action Plan
Worldwide	2007	Council of Europe ResAp (2007)3

The *ADA Accessibility Guidelines* (**1991**) have played an important role in Universal Design approach by guiding professionals in the design of built environment. Although developed according to the American accessibility standards, it became as a guiding document and has been adopted in the other countries. In Turkey, this document was used in revising the Turkish standards regarding the physical environment.

The *United Nations Standard Rules on the Equalization of Opportunities for Persons with Disabilities* (**1993**) Rule 5 emphasized the necessity of taking measures for removing barriers in the physical environment which limit individuals' full participation into various areas of society through developing standards and guidelines and enacting legislations. Architects and other professionals dealing with the built environment should have access to information on disability policy and accessibility measures. Accessibility is assumed to be an issue which should be considered from the beginning of the design process (United Nations, 1993).

United Kingdom enacted the *Disability Discrimination Act* in **1995** in order to prevent discrimination against people with disabilities in all areas including the design and the management of built environment (CEBE, 2002:8). *Special Educational Needs and Disability Act* (SENDA) **2001**, emphasizes the importance of improving the physical environment of the schools, with an accessibility strategy, for ensuring children with special needs enjoy education and associated services provided for them (SENDA, 2001).

The Council of Europe Committee of Ministers adopted *Resolution on Universal Design Curricula* which is known as *Tomar Resolution* (Council of Europe ResAP (2001)1) on February 15, **2001** with the aim of introducing "the principles of Universal Design into the curricula of all occupations working on the built environment" whose responsibility is to make the built environment accessible, usable and understandable for everyone, including people with disabilities. Tomar Resolution emphasizes the shift of understanding in architecture with the advent of Universal Design from ensuring mere accessibility of buildings for people with disabilities to an integrated design understanding that provide equitable use for all.

According to this Resolution Universal Design has been identified as "a strategy which aims to make the design and composition of different environments, products, communication, information technology and services accessible and understandable to, as well as usable by, everyone, to the greatest extent in the most independent and natural manner possible, preferably without the need for adaptation or specialised solutions" (Council of Europe Committee of Ministers, 2001; Ginnerup, 2009:7, 8). Referring to the Resolution ResAp (2001)1, the *Council of Europe Disability Action Plan* **2006-2015** considers creating environments accessible to people with disabilities and avoiding the creation of new barriers through the implementation of Universal Design principles (Council of Europe, 2006:19).

Council of Europe Committee of Ministers adopted *Resolution on Achieving Full Participation through Universal Design* (Council of Europe ResAP (2007)3) on December 12, **2007** with the aim of improving "participation in political, public and cultural life, to provide for accessible and inclusive communication systems and information, education, built environment, transport systems, health care and research and development" through "applying Universal Design strategies".

The Resolution (ResAP (2007)3) acknowledges the shift of understanding in Europe for the full participation of people with disabilities in society since the mid-20th century from identifying and eliminating existing barriers to developing design solutions with *built-in adaptability* and *compatibility*. It is important to prevent the creation of new barriers through the design solutions that are accessible and usable for all (Council of Europe Committee of Ministers, 2007).

The *United Nation's Convention on the Rights of Persons with Disabilities* (adopted on December 13, **2006** and entered into force on May 3, **2008**) gives the definition of Universal Design in Article 2 and emphasizes the necessity of providing assitive devices for particular group of people with disabilities where needed. In Article 4, it is claimed that countries should "promote research and development of universally designed goods, services, equipment and facilities" with "the minimum possible adaptation and the least cost to meet the specific needs of a person with disabilities" (UNCRPD, 2006:6).

2.3.2 Universal Design: Definition and General Aims

Mace defined Universal Design as "the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. The intent of Universal Design is to simplify life for everyone by making products, communications, and the built environment more usable by as many people as possible at little or no extra cost. Universal Design benefits people of all ages and abilities" (The Center for Universal Design, 2008).

The roots of Universal Design research date back to the promotion of equal opportunity in education[4]. Beginning from 1985, there is a shift in design thinking that values inclusion of people with functional limitations from "narrow code compliance to meet the specialized needs of a few to a more inclusive design process for everybody" (Ostroff, 2001:1.3). The mission of Universal Design is not restricted with the aim of meeting the accessibility requirements in national legislations. Mace noted that minimum standards are an important part, but not the definition of Universal Design (Ostroff, 2001:1.5).

Ostroff (2001:1.4) considers the precedent "separate is not equal"[5] as the milestone that informs the emergence of a new sensitivity in design approach that respects all users. Universal Design has been defined as "a design approach that assumes that the range of human ability is ordinary, not special." The aim of design is to create environments and

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[4] The U.S. Supreme Court Decision in 1954, *Brown vs. the Board of Education*, marks the beginning of the efforts of equal opportunity in education. These efforts also gave way to a sensitivity in design that values diverse users (Ostroff, 2001:1.4).
[5] The U.S. Supreme Court Decision in 1954, *Brown vs. the Board of Education*, established the precedent that "separate is not equal" against racial segregation in public schools (Ostroff, 2001:1.4).

products that promote human functioning depending on the possibility of experiencing a misfit between the built environment and the products for each individual (Ostroff, 2001:1.3).

Imrie and Hall (2001:14) defined Universal Design as a social movement and its main concern is to make "products, environments and communication systems usable to the greatest extent possible by the broadest spectrum of users" and illustrated views and quotations that highlight the significance of "equitable use" and "the development of design which does not disadvantage any group of users" (Imrie and Hall, 2001:15). Similarly, Ginnerup (2009:5) defined Universal Design as a design strategy "for making environments, products, communication, information technology and services accessible to and usable by everyone - particularly people with disabilities - to the greatest extent possible".

Universal Design has been considered as a new paradigm in design "that aims at a holistic and integrated approach" in design disciplines such as planning, architecture, product design and information technology (Ostroff, 2001:1.3) and that "highlights a major paradigm shift – from treating people as part of the medical model, as dependent, passive recipients of care and services, to a model in which everyone is treated as an equal citizen and disability is seen as a social construct" (Sandhu 2001:3.4).

The awareness and sensitivity that arose around international disability movement depending on the rapid growth in the number of elderly and disabled populations, gave rise to legal regulations for promoting accessibility in the built environment in most of the developed countries such as United States, Canada, United Kingdom, Western Europe, Australia and New Zealand (Fletcher, 2009:3, Ostroff, 2001:1.3). The social and cultural differences in each country context effected the development of Universal Design movement, therefore the terminology used to imply Universal Design varies. There are also significant differences in the use of the terms. However, "the similarities are more apparent than the differences as they transcend national laws, policies, and practices" (Ostroff, 2001:1.3).

Universal Design is a term that was first used in United States by Ron Mace in 1985. Universal Design and inclusive design are used interchangeably in United States to imply equity and social justice by design. There are also frequently used terms such as life span design and transgenerational design, but they have less emphasis on social inclusion

(Ostroff, 2001:1.5). Inclusive design is a value-based process during which individuals' right to participate in community life is secured. It is claimed to be "better suited to the UK context and value system" (CEBE, 2002:1,4).

In the late 1950s, the efforts for removing barriers from the built environment for increasing accessibility of people with disabilities began and the term barrier-free design began to be used worldwide. However, recently in the United States the term is being perceived as a negative term and accessible design became more widely used in the 1970s. In Europe, barrier-free design is used to imply Universal Design and design for all began to be used since 1967. In Japan, the term Universal Design is used widely (Ostroff, 2001:1.5). Tappuni (2001:63.1) views Universal Design as an advanced phase of barrier-free design. The differences in terminology reflect the evolution of the progress from barrier removal to a more inclusive design approach (Ostroff, 2001:1.5).

The concept of designing for all children, which is similar in context to Universal Design approach, recognizes that each child is unique and passes through a series of stages of development, that are different for each child including children with disabilities. It means creating environments that can be usable by all children without the need for adaptation and contributes to the elimination of both physical, social and attitudinal barriers in the built environment (Stoecklin, 1999).

There is a vast amount of literature in design research which focuses on achieving accessibility in the built environment through addressing the issues of disability and aging. Some of the advocates of inclusion in design research criticized the narrow perspective that only takes into account disability and aging issues (Miles, 2000; Sandhu, 2001; Imrie and Hall, 2001). However, "experience has shown that meeting the needs of disabled or elderly people, frequently generates design solutions which benefit a wider range of user groups, such as young children or people with prams, heavy luggage, temporary injuries etc." (CEBE, 2002:10).

Universal Design and Accessible Design are two design approaches that emphasize the significance of **accessibility** and **usability** in design principles. However their understanding of these two terms clearly differentiates from each other in some ways. First distinction is in their definition of user profile. While Accessible Design has a special attention for people

with disabilities (Steinfeld, 1994) who "have been viewed as being different from the nondisabled population, requiring buildings and products that are designed differently from those produced through routine design practices" (Connell and Sanford, 1999:37), Universal Design cares for everyone including people with disabilities (Steinfeld, 1994) and "promotes accessibility on a broader scale than do conventional approaches to accessibility" (Connell and Sanford, 1999:37). The aim of Universal Design extends far "beyond the issues of mere accessibility of buildings for people with disabilities" (Council of Europe, 2001). Traditional design approaches to accessibility hold the belief that access is a medical and a clinical issue which only people with disabilities can benefit (Connell and Sanford, 1999:35, Steinfeld, 1994).

Second distinction between these design approaches is in the tendency of Accessible Design for separating facilities, environments and products for people with disabilities. Besides the limitations/constraints of special facilities, environments and products (ie. assistive technology) such that they are "too expensive, hard to find, unreliable and difficult to repair", the most objection from the people with disabilities is their stigmatizing characteristic since they promote a negative self concept (Steinfeld, 1994). Universal Design has been defined as a design attitude which aims "to restore disabled people's self-esteem, dignity and independence" (Imrie and Hall, 2001:16) by drawing "attention away from people's impairment as a source or site of difference to minimize the possibilities of social ostracism" (Imrie and Hall, 2001:15).

The third and the most prominent feature which separates Universal Design from Accessible Design is its emphasis on **inclusion, social integration, participation, equity** and **equitable access**. Steinfeld (1994) acknowledges that Accessible Design, which lacks emphasis on social integration, does not go beyond claiming that "people with disabilities have a right to access and use of products and environments" and implies that Universal Design is an adequate solution to accessibility since it "promotes full integration in every way". According to Erlandson (2008:179), Accessible Design is concerned with removing barriers in the built environment in compliance with laws, guidelines, and standards, rather than attending to being equitable. Rather, Universal Design appreciates equity among other principles and places it at the top of the hierarchy rank. Equity, which is the essential part of prestructuring the design problem, should be addressed from the beginning of the design process (Erlandson, 2008:185).

The aim of Universal Design is "to ensure **equal chances of participation** in economic, social, cultural, leisure and recreational activities, everyone of whatever age, size and ability must be able to access, use and understand any part of the environment as independently and as equal to others as possible" (Council of Europe, 2001). One of the factors which violates **full** and **equal participation** in social and economic activities and independent living of people with disabilities is inaccessible and poorly designed built environment which prevents their ease of mobility, movement and access (Imrie and Hall, 2001:ix). Assistive devices are used to alleviate the disabling factors in the environment and "help to create a better interface between the user and the environment" (Tappuni, 2003:63.3). However they are unfavourable depending on their stigmatizing effect (Steinfeld, 1994). Another factor hindering participation is the misconception regarding people with disabilities which devalue their contribution in socioeconomic development. Enabling participation of important sectors of society in the socioeconomic development of the country is claimed to provide **equitable access** (Tappuni, 2001:63.2).

The comparison between Universal Design and Accessible Design revealed that Universal Design took the development of design thinking one step further from the condition which views accessibility and usability as ends of design which is achieved through legally mandated design guidelines. Although an awareness and sensitivity towards people with disabilities is inherent in both design approaches, Universal Design appreciates **social integration, participation** and **equity** of all people including people with disabilities as ends of design, whereas **accessibility** and **usability** are regarded as means which are used as principles guiding during design process.

Universal Design addresses the fundamentals of design disciplines in order to achieve an inclusive environment for the full spectrum of population with a special emphasis on the inclusion of children, elderly and people with disabilities (Tappuni, 2001:63.1, 63.2) who need special assistance for participating everyday community life and are more vulnerable to the effects of exclusion. Their rights regarding their role in society are secured in various human rights treaties.

There is a variety of different type of users with conflicting design needs among people with special needs. It is certain that Universal Design has an intention to address these needs to the greatest extent possible. However, there is uncertainity about how Universal Design will

respond to these needs. The proponents of Universal Design admit that the products and the environments designed may not "be usable by all people from the beginning" (Steinfeld, 1994). "Flexibility, adaptability and interchangeability" (Imrie and Hall, 2001:16) are important features in product and architectural design in order "to provide an environment … that can be easily adjusted to meet the need of any person" (Steinfeld, 1994).

Imrie (2004:282) addresses the uncertainty in Universal Design as an important problem and highlights the priority of the development of a social and a political programme, in order to achieve the desirable change in the lives of people with disabilities. Unless the social, technical, political and economic processes and their interrelationships underpinning building and design are addressed enough, the notion of inclusion will not be promoted in environments, products and communications. Universal Design is criticized since it does not go beyond providing a mere technical or design solution and the necessity of a more inclusive design process has been acknowledged (Imrie, 2004:282).

As emphasized in this part, inclusion is claimed to be the most distinguishing parameter of Universal Design which differentiates it from the traditional design approaches to accessibility. There is an intensive emphasis on inclusion in Universal Design literature, which is an important step that takes the understanding of design beyond a mere technical solution by underpinning social and cultural factors that determine the form and content of design. Universal Design aims to provide environments and products that enhance human functioning. However it does not make any statement about how individuals' capabilities will be maximized as they use these environments and products, and it does not provide an understanding regarding inclusive design process.

2.3.3 An Overview on the Development of Universal Design Principles

The primary goal of Universal Design is *usability*, which is a term used today to define a much broader set of design requirements and human dimensions than used until 1970s. In 1950s, *usability* referred to considering design standards based on a standing male form. In 1970s, design reference books started to include dimensions for females and children. However, the image of the ideal universal man and average dimensions were still strong which force people who do not fit, to adapt or change their behavior in order to be able to function in environments based on these measures. In 1990s, with the development of

accessible design guidelines that are legally mandated, dimensions for people with disabilities including generally a person seated in a wheelchair, began to be considered (Mallory-Hill and Everton, 2001:16.2).

With the shift of understanding in disability, the relationship between people and environment changed "from considering people in environments to be disabled to considering environments and products to be disabling" (Mallory-Hill and Everton, 2001:16.2). Depending on this major shift, Universal Design came to the scene, with its ethical, social and cultural underpinnings such as **social inclusion, participation** and **equity.** Universal Design improved the meaning of the term *usability,* which was once including wheelchair users as the most important accessibility standard, to include a widest range of human dimensions depending on a variety of human functioning.

Universal Design principles were developed to address issues of design usability for the widest diversity of individuals. These principles evolved from the study of Universal Design experts (including architects, product designers, engineers and environmental design researchers) who performed several meetings at the offices of the Center for Universal Design at North Carolina State University. The objective of these meetings was to develop design principles and guidelines in order to address issues of design usability for the widest diversity of individuals (Story, 2001:10.5). First meeting was performed on April 28 and 29, 1995. The earliest draft, dated May 22, 1995, included ten principles. These are:

1. simple operation
2. intuitive operation
3. redundant feedback
4. gradual level changes
5. space for approach and movement
6. low physical demand
7. comfortable reach range
8. minimization of and tolerance for error
9. alternate methods of use
10. perceptible information

The number of principles reduced to six by the second version dated July 26, 1995. Each principle included a set of guidelines. These principles are:

1. make it easy to understand
2. make it easy to operate
3. communicate with the user
4. design for user error
5. accommodate a range of methods of use
6. allow space for access (Story, 2001:10.5, 10.6).

The concept of *equitable use* did not appear until the final draft dated August 31, 1995. Although some of the experts claim that this concept is fundamental for the definition of Universal Design, it is accepted as a principle that is prior to other principles. *Equitable use* is the only principle that does not directly address usability, but rather egalitarianism. The *first version of the Principles of Universal Design* was published in December, **1995**.

Finally, *second version* including the final form of Universal Design principles followed in April 1, **1997**. The seven principles, which should be integrated into the design of products, environments and communications from the outset of design process are:

1. Equitable use
2. Flexibility in use
3. Simple and intuitive use
4. Perceptible information
5. Tolerance for error
6. Low physical effort
7. Size and space for approach and use

Each principle includes a set of guidelines (Story, 2001:10.6). The final version of Universal Design principles is described in Table 2.12.

Table 2.12 Principles of Universal Design, Version 2.0.

Principles and Guidelines

1. Equitable use

The design does not disadvantage or stigmatise any groups of users. The design is useful and marketable to people with diverse abilities.

Guidelines:

1.a. Provide the same means of use for all users-identical whenever possible; equivalent when not.

1.b. Avoid segregating or stigmatizing any users.

1.c. Make provisions for privacy, security, and safety equally available to all users.

1.d. Make the design appealing to all users.

2. Flexibility in use

The design accommodates a wide range of individual preferences and abilities.

Guidelines:

2.a. Provide choice in methods of use.

2.b. Accommodate right- or left-handed access and use.

2.c. Facilitate the user's accuracy and precision.

2.d. Provide adaptability to the user's pace.

3. Simple and intuitive use

The use of the design is easy to understand regardless of the user's experience, knowledge, language skills or concentration levels.

Guidelines:

3.a. Eliminate unnecessary complexity.

3.b. Be consistent with user expectations and intuition.

3.c. Accommodate a wide range of literacy and language skills.

3.d. Arrange information consistent with its importance.

3.e. Provide effective prompting and feedback during and after task completion.

4. Perceptible information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Guidelines:

4.a. Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.

4.b. Maximize "legibility" of essential information.

4.c. Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).

4.d. Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

5. Tolerance for error

The design minimises hazards and the adverse consequences of accidental or unintended actions.

Guidelines:

5.a. Arrange elements to minimize hazards and errors-most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.

5.b. Provide warnings of hazards and errors.

5.c. Provide fail safe features.

5.d. Discourage unconscious action in tasks that require vigilance.

(Table 2.12 continued) Principles of Universal Design, Version 2.0.

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6. Low physical effort
The design can be used efficiently and comfortably and with a minimum of fatigue.
Guidelines:
6.a. Allow user to maintain a neutral body position.
6.b. Use reasonable operating forces.
6.c. Minimize repetitive actions.
6.d. Minimize sustained physical effort.

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7. Size and space for approach and use
Appropriate size and space is provided for approach, reach, manipulation and use, regardless of the user's body size, posture or mobility.
Guidelines:
7.a. Provide clear line of sight to important elements for any seated or standing user.
7.b. Make reach to all components comfortable for any seated or standing user.
7.c. Accommodate variations in hand and grip size.
7.d. Provide adequate space for the use of assistive devices or personal assistance.

Adapted from R. Imrie and P. Hall, *Inclusive Design: Designing and Developing Accessible Environments.* London and New York: Spon Press, 2001, p. 15, M. F. Story, Principles of Universal Design. In W. F. E. Preiser and E. Ostroff (Eds.), *Universal Design Handbook.* New York: McGraw-Hill, 2001, pp. 10.7-10.8, The Center for Universal Design, The Principles of Universal Design, Version 2.0. Raleigh, NC: North Carolina State University, 1997.

Promoting human functioning is a fundamental issue to be considered in design process through considering and emphasizing human strengths rather than confusing with human weaknesses (Erlandson, 2008:67). People are at the center of Universal Design, which can enhance every individual's experience and capabilities (Fletcher, 2009:3). Erlandson (2008:67) proposed eight principles for Universal Design which falls into three broad categories. These principles and categories are:

a. Principles dealing with human functions (person-centered concerns)

1. Ergonomically sound
2. Perceptible
3. Cognitively sound

b. Principles dealing with processes (process-centered concerns)

4. Flexible
5. Error-managed (proofed)
6. Efficient
7. Stable and predictable

c. Principles dealing with value judgments (transcendental concerns)

8. Equitable

Higher level places design constraints on the lower level

Transcending principles

Process related principles

Human factors principles

More general
More encompassing

More detailed
More narrowly defined
More specific
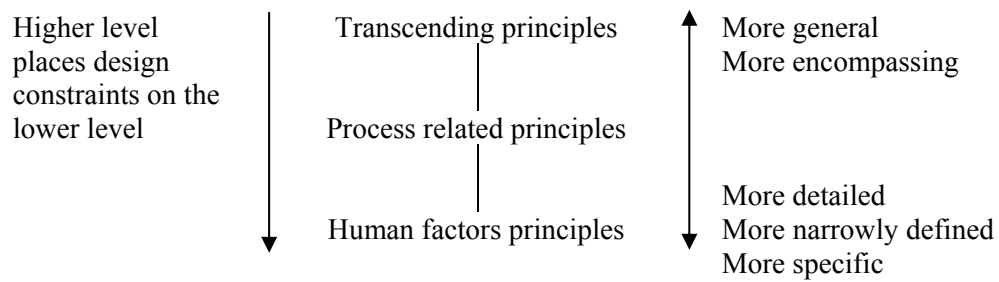
Figure 2.3 Hierarchical categorization of Universal Design principles (In R. F. Erlandson, Universal and Accessible Design for Products, Services, and Processes. Boca Raton: CRC Press Taylor and Francis Group, 2008, p.68).

These principles have a hierarchial structure. At the top of the hierarchy is a value-based principle, that is equitability. This is the governing principle that all design activities should strive for. Process related principles are located in the middle of the hierarchy. Universal Design put an emphasis on design process, and the aim is to achieve becoming more inclusive. At the base of the hierarchy are human factors principles which imply that individuals and human rights are the determinants and the foundations of all design activities.

Process related principles (flexible, error-managed, efficient, stable and predictable) can be better understood from the perspective of conceptualizing inclusive design as a participatory process achieved through the collaboration of a multi-professional team including not only architects or designers, but also surveyors, project managers, engineers, supervisors, and also users. Inclusive design processes consist of programming, briefing, designing, construction, processes of feedback and post occupancy evaluation (CEBE, 2002:11). Through such process, management of that environment for the maintenance, performing future adaptations or the provision of extra facilities becomes possible.

Fletcher (2009:2), by adapting Erlandson's categorization, proposed a model explaining the variation on the principles of Universal Design (Figure 2.4). Fletcher's model highlights the importance of human function principles, which involves three broad factors of functional limitation. These are ergonomic (i.e., mobility, dexterity, strength limitations), perceptible (i.e., sensory including sight, hearing, speech, touch), and cognitively sound (i.e., brain-based learning differences, intellectual limitations, psychiatric conditions, brain injury, and issues from simple memory loss to dementia related to aging). Human function principles

describe a broad spectrum of users and reveal the conceptual difference in the use of the term *accessibility* in both Universal Design and Accessible Design (Fletcher, 2009:2,3).
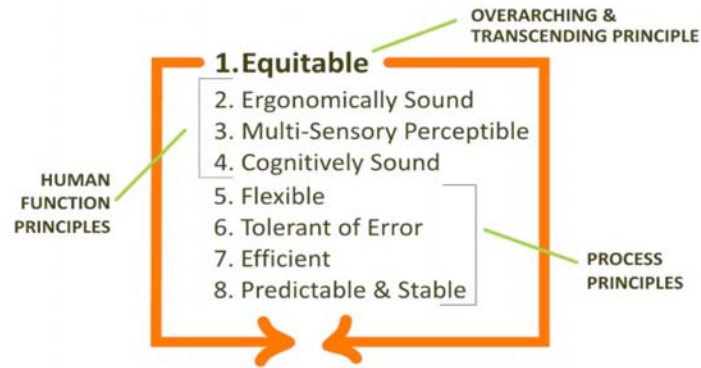
Figure 2.4 Variation on the principles of Universal Design (In V. Fletcher, A Global Perspective: Universal Design as Socially Sustainable Design, Draft Paper, Institute for Human Centered Design, 2009, p. 2)

As there are diverse ways of achieving inclusion in education, there is also a wide range of possibilities for promoting inclusive education environments through architectural design. This thesis claims that Universal Design principles for education environments can be expanded by disclosing and broadening the meaning of inclusion. As it has been indicated before, in inclusive education, the process of becoming inclusive (which revals individuals' potentials and enhances their capabilities during achieving knowledge) is getting more significant than the desired ends, such as information recall and academic achievement, which were traditionally primary goals of education. This understanding is based on the *process-based and student-centered understanding of inclusion* developed throughout this thesis.

Similarly, Universal Design principles can be differentiated by infusing a *process-based and student-centered understanding of inclusion* by focusing on individual strengths with the aim of maximizing student capabilities in an effective education environment during the process of achieving inclusion in education. This issue has been elaborated in Chapter 5 through the consideration of design aspects for maximizing students' physical, cognitive, sensory (visual, auditory, tactile and kinesthetic) and social capabilities.

CHAPTER 3

CONCEPTUAL FRAMEWORK:
CONCEPTUAL DISCLOSURE OF THE NOTION OF INCLUSION

This thesis focuses on building *a common framework for education and architecture during the promotion of inclusion in primary education* through reconsideration of Universal Design principles with a critical perspective. However, as explained before, there are conceptual ambiguities regarding the notion of inclusion. In order to understand the mission and the aims of inclusive education, there is a need for a clear understanding and conceptual disclosure of the notion of inclusion. It is important to clarify the issues concerning the status and the nature of inclusion, its relation to education and architecture.

Differentiation of knowledge in architecture is very significant in order to envision designers' concern with architectural problems especially in the briefing and programming stage of design. It is important to inform architects about the issues regarding inclusion, in order to ensure architects identify the design problem with a clear vision. In architectural design, prior to programming, briefing is an important part in understanding/conceiving, restructuring the design problem and for the emergence of generative ideas. Without a brief about the notion of inclusion, its role in education and its different interpretations, proposals for architectural space will not be fruitful. Inclusion as a primary notion within the context of Universal Design will be beneficial for clear understanding of architectural problems by the architects whose aim is to bring a vision, a creative insight into the architectural problems prior to their creative physical interpretations. So, it is essential to disclose the meaning of inclusion, to grasp the very idea of inclusive education and Universal Design principles prior to briefing stage in architectural design of inclusive education environments.

3.1 Conceptual Status of the Notion of Inclusion in General

The notion of *inclusion* has found a widespread use in all languages and in all forms of conversations, social, political, educational, etc. for the legitimization of all kinds of discourses.

> 'Inclusion' has become something of an international buzz-word. It's difficult to trace its provenance or the growth in its use over the last two decades, but what is certain is that it is now *de rigeur* for mission statements, political speeches and policy documents of all kinds. It has become a cliché – obligatory in the discourse of all right-thinking people (Thomas and Loxley, 2001:vii).

> In recent philosophy of education, as in philosophy more generally, it is difficult to find a theme more widely discussed, or universally endorsed, than that of inclusion. Postmodernists, feminists, critical theorists, discourse ethicists, old-fashioned liberals and many others routinely extol the virtues of inclusionary discourses and theories -- discourses which seek out, make room for, and take seriously, and theories which adequately reflect, the voices, views and interests of those who are and have traditionally been excluded from discussion and/or consideration (Siegel, 1995).

The meaning of *inclusion* is reinforced by the accompanying terms such as human rights, equity, social justice, democracy and participation. The taken-for-grantedness of the moral significance of inclusion has made the term universally accepted and embraced in all theories which strive for anti-discrimination of all types against all individuals, however by precluding the necessity of a search for epistemic status of inclusion. All kinds of knowledge forms take place within the confines of epistemic theorizing and require a scrutiny in terms of their conceptual framework. This thesis highlights the necessity of reconstructing the notion of inclusion on epistemic grounds which is widely embraced as a notion solely constructed on moral grounds.

The need to place Universal Design into the wider and more general critical discourse around the built environment has been informed in the literature (CEBE, 2002:21) depending on the fact that "Universal Design still remains largely atheoretical" and "the researchers of Universal Design do not explicitly affiliate themselves to any form of theoretical paradigm" (D'Souza, 2004:3). D'Souza associates Universal Design with critical theory in its

conception and knowledge generation. Although the term *universal* "refers to a set of principles that are stable, timeless and value free", D'Souza (2004:3) claims that Universal Design principles are changeable, time bound and value laden.

Critical theory is the critique of existing social systems and transformation of social relationships through revealing their underlying sources and empowering people by providing means to understand and change their world. A critical theory develops through interacting with the world it seeks to explain. This knowledge generation is claimed to be present in Universal Design whose principles have been developed by participation of a community of researchers and then became a resource for other people to make use of and to transform their social world. These value laden principles of Universal Design are considered internationally and worldwide and interpreted within the framework of researchers' and designers' own cultural setting and value system (D'Souza, 2004).

3.1.1 Moral and Epistemic Significance of Inclusion

Depending on the arguments presented in this chapter, this study poses the following question: Is inclusion an idea with epistemic justification or an ideal moral condition? Its answer causes ambiguity among the philosophers. The aim is not to claim that inclusion is an idea, or an ideal or both. This study intends to evoke different points of view regarding the issue of conceptual status of inclusion.

Inclusionary discourses and theories are widely discussed in recent philosophy of education. These theories aim to reflect the voices, views, interests of people who have been excluded from discussions until now. Univesality vs. particularity are viewed as two opposing ideas of exclusionary/inclusionary discourses. However Siegel (1995) claims that "embracing inclusion as a conversational and theoretical ideal does not require the rejection of the universal, or the rejection of scholarly standards." Siegel identifies inclusion as a moral issue (ideal condition) by claiming that "it is morally wrong to exclude people from conversations in which they have an interest". He assumes that grounding inclusion epistemically is wrong, since it requires the rejection of universalism and of standards. There is no need to justify inclusion epistemically. From this point of view, the universal and the particular are compatible notions. "The universal/particular dichotomy is one that advocates of inclusion should reject" (Siegel, 1995).

Universal Design has been misconceived as an approach which disregards individuals' particular needs, depending on its emphasis on *design for all rather than specialized design*. From this point of view, universal seems to reject particular. However, Universal Design generally acknowledges that meeting the needs of a particular group of people generate design solutions that a large group of people can benefit. This understanding reveals that particular and universal embrace each other and the criteria of the particular can be implemented to the universal.

In the same way, in education all children can benefit from the practice of inclusive education besides children with special educational needs. If the criteria of the particular (the principles of inclusive education practice such as identification and assesment of each children's strengths and weaknesses, implementation of Individualized Education Programme, adaptation of the curriculum, provision of supportive services in resource rooms, adaptation of the physical environment) are applied to the universal, all children can achive their full potential during the process of accessing to equal opportunities in education.

The legislations illustrated in this study ensure each individual participate in dialogue regarding their needs and interests. Through dialogue people can recognize and understand each individual's subjectivity, point of view and particular needs and interests. A meaningful inclusion is possible when participants representing diverse groups contribute to, as well as, benefit from the intellectual, social and cultural knowledge production within a group.

Inclusion can be claimed to be an epistemic virtue, which does not alone guarantee achievement of truth. However, it can provide better outcomes during the knowledge production process. Howe (1997) denotes that similar to the search of scientific truth (as in the method of unbiased sampling), including the diverse groups of people provides a better chance of obtaining worthwhile results than excluding the knowledge these groups take into the conversation. Kilby (2004:305) maintains that inclusion has "epistemic significance in cases where exclusion would limit the perspective of inquirers and lead them to overlook important information or possible ways of explaining an outcome."

3.1.2 Theory of Communicative Rationality for Justifying Inclusion

Among proponents of critical thinking, Siegel claims that "discursive inclusion of diverse groups should not be confused with rational justification of the outcome of inquiry." Siegel asserts that inclusion is an epistemic virtue, rather than an epistemic criterion because it is neither necessary nor sufficient for justifying beliefs (Kilby, 2004).

Here, the status of inclusion as an epistemic virtue must be clarified from the point of rationality -whether the criteria of inclusion satisfy rational justifications. This study assumes that inclusion of people in certain contexts is not always a necessary condition if there is no shared activity with certain reasoning behind it. As far as the rational justifications of inclusion is concerned, the epistemic nature of reasonings need to be clarified -whether they provide meaningful rational knowledge production to its participants.

According to Kilby (2004), "Jürgen Habermas's theory of communicative rationality provides a nonrelativistic basis for justifying inclusion and giving it a place of priority in practical reasoning". Habermas' ideas become significant for clarifying the relationship between epistemic virtue and epistemic critera in the knowledge production process of inclusion. In his theory of *Communicative Action*, he questions the possibility of intersubjective agreement among the participants of a group of people who have equitable access to the dialogue. Communicative action seeks to resolve the problem of agreement regarding common values and ideas shared across all cultures and diverse groups of people.

Communicative action asserts that through systematic discussion and communication, humanly shared ideas and values can be uncovered in a way that everyone can be included, can reach agreement and can get equal benefit. He points out that the process of agreement can only be inclusive when all participants are motivated by an interest in searching for a truth throughout their intersubjective communication. Here, epistemic virtue of an intentional activity of communication has resulted in epistemic criteria during a search for truth for shared benefits. The results of this process are different from purely rationally motivated consensus. It is based on agreement of a self-interested negotiation. Rationality in the process of communicative action of inclusion relies on the reasoning that goes beyond the action itself. Habermas underlines the significance of practical reason in rational justifications of knowledge production in different social contexts (Kilby, 2004).

The proponents of critical thinking in the field of education -whose main concern is to foster rational judgment as a basis for decisions and beliefs- identified the virtue of *critical spirit of open-mindedness* as a requirement to encourage critical thinking skills which includes other virtues such as willingness to listen to others, willingness to take multiple points of view into account, willingness to perceive one's own prejudices and willingness to admit when one's viewpoints need to change (Kilby, 2004:299).

These virtues are also emphasized in Habermas' theory of communicative action- which Kilby identifies as a basis for justifying inclusion- as requirements for an ideal speech situation (ideal communicative situations). Habermas (1999:142) refers to Selman's theory of the development of perspective-taking ability[6] which is a major contribution in the field of social psychology. Selman's theory is significant for understanding when and to what degree children can participate in decisions concerning themselves and their best interests.

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[6] Selman has identified 5 stages in the development of perspective taking ability (social role-taking or social perspective-taking):

1. *Stage 0: Egocentric perspective-taking (about ages 4-6)*
   The child can differentiate self and other as entities, but cannot make a distinction between a subjective view of a social situation and possible alternative views (Selman, 1973: 7,8). The child fails to distinguish between the social perspective of other and self. Others should have similar views with her/his own.
2. *Stage 1: Social-informational (subjective) perspective-taking (about ages 6-8)*
   The child recognizes others' different ways of viewing a social situation. Self and other are viewed as subjects with different interpretations of the same social situation, determined according to the information they have (Selman, 1973:9; Selman and Byrne, 1974:804).
3. *Stage 2: Self-reflective perspective-taking (about ages 8-10)*
   The child becomes aware that the other can view the self as a subject as the self recognizes the other. Depending on the development of ability to view other viewing the self enables the child to step outside the self and reflect upon the self's thought (to become self-reflective) (Selman, 1973:10, 11). The child can also view the relation of self and other from other's point of view (Selman, 1973).
4. *Stage 3: Mutual perspective-taking (beginning from the age 10)*
   The child discovers that both self and other can consider each others' point of view simultaneously and mutually. Each can put herself/himself in the other's place and view herself/himself from that vantage point before deciding how to react (Selman, 1973). Each can consider a situation from the perspective of a third party who can also assume each individual's point of view and consider the relationships involved (Selman and Byrne, 1974:804, 805).
5. *Stage 4: Societal-symbolic perspective-taking (beginning from the age 12)*
   The child recognizes that self and other can understand that both can remove themselves hypothetically from the situation and view its dynamics. Social conventions are necessary because they are understood by all members of the group and are used as a means of communicating to others (Selman, 1973).

Habermas' theory is significant for explaining the prominence of ideal communicative situations in inclusive education. As explained several times in this study, the main concern of inclusive education is to promote best interests of children with the support of teachers, professionals, families, even peers and appropriate education programmes and facilities. Teachers and families are willing to cooperate regularly in the school. Teachers implement cooperative teaching methods in general education classrooms where they are open to listen to the views of special education teachers, advisors and learning assistants. There are professionals from different areas of expertise giving additional support for students either within the school (school-centered supportive services are preferred, if available), or in separate institutions that coordinate with the schools. The presence of multi-professionals and different types of facilities (including curriculum-based, rehabilitation, collaborative and community use) demands *ideal communicative situations* to ensure the integrity of education system. Ideal communication is necessary to ensure the sustainability of inclusive education system.

3.2 Education and Inclusion: Educational Approaches that Support Inclusion

Today, the application of Universal Design transcends the boundaries of architecture and product design. As can be traced in some of the applications in education, Universal Design has recently been introduced as a strategy for learning in order to cater the needs of all students who have diverse ways of understanding and experiencing the world. This thesis claims that constructivist approaches in education developed by Piaget and Vygotsky, multiple intelligence theory of Gardner and a more recent approach Universal Design for Learning have implications for promoting inclusive education system in primary schools.

3.2.1 Constructivist Approaches in Education

Epistemological interest for the question of "how people learn" begins with the empiricist theory which assumes that knowledge is directly acquired by internalization of representations of the external world through sensory experience depending on keen observation. The second alternative to the question is idealism (realism) which claims that knowledge is derived from innate ideas which unfolds through time. Modern version of this line of thought is innatism (Lawson, 2003:2). The third alternative is constructivism which is a reconciling position between the two long-standing traditions of epistemology.

Constructivist epistemology assumes that knowledge is acquired through the active interaction of the child with the external environment through the reflecting capacity of her/his cognitive faculties on the prior experiences she/he had.

Although constructivism has emerged as a non-traditional method among educational theories, its roots can be traced back to the 18th century Italian philosopher, Giambattista Vico, who had claimed that "the human mind can know only what the human mind has made[7]". Constructivism differs from the traditional theory of knowledge since it makes no claim for ontological reality which is believed to be independent of the human experiencer. Individuals cannot grasp anything that lies beyond their experiential interface. The only world which is conceived and perceived is the experiential world, which individuals establish with their constructive efforts (Glasersfeld, 1997).

In the early 1970s, instructional methodologies that view knowledge as "static, fixed entity external to the knower" began to be criticized. There was a growing interest for constructivist epistemology which claims that knowledge is a product of human construction and a dynamic reality reconstructed by the knower within his/her own social, cultural and historical location. In this approach, the role of the teacher is to encourage a dialogue between students and herself/himself (Chambers et al, 1999).

According to constructivist theory of learning, the adaptation of an individual into her/his social environment is inescapable. Every individual can establish a relative fit with the consensual domain of the social environment. In the education environment, the consensual domain into which the child should learn to fit is that of teachers, peers, parents, etc. Teaching aims at the students' conceptual fit with the consensual domain of the particular field. This process constitutes understanding. The teacher is a guide, who encourages and orients the student's constructive efforts rather than transmitting her/his knowledge to the students who were traditionally defined as empty vessels to be filled (Glasersfeld, 2003).

In recent years, educational discourse has begun to challenge the traditional view of knowledge by valuing diverse ways of understanding and knowing the world and emphasize the active role of the learners in knowledge construction. From the constructivist viewpoint

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[7] Vico's well-known principle "Verum esse ipsum factum" has been translated as "the truth is the same as the made". The Latin word *factum* and English word *fact* are both derived from the Latin word *facere* which has been translated as *to make* (or to construct) (Glasersfeld, 1984).

which was first advocated by Piaget and developed by Vygotsky with an emphasis on social, historical and cultural contexts, individuals construct new ideas or concepts based on prior knowledge, experiences and social interactions, learning is an active construction of knowledge and an on-going process and instruction has a supporting role for this construction. In other words, knowledge is a human construction and environment has an important role to play in this construction. Besides teachers' significant and supporting role in facilitating the students' knowledge construction, the role of peers and family members (caretakers) are also emphasized.

Constructivist approaches in education emphasize student-centered learning, diversity and plurality of children's understanding, experiences, abilities. Constructivist approaches to education have implications for inclusive education system in providing the necessary adaptations in education environment in line with childrens' special needs and interests. Udvari-Solner, et. al. (2005) acknowledge the diversity of prior knowledge among learners, which is influenced by background experiences and cultural practice and state that teachers should ensure that new knowledge is related to individuals' existing knowledge in meaningful ways.

a. Cognitive constructivist: Jean Piaget and Scheme Theory

In the field of education, researchers shift their understanding of assessment from evaluating what children know through the use of psychometric tests (such as IQ tests) towards a search for why and how knowledge is acquired by children. The pioneer of this understading is Piaget who believed that the lines of reasoning underlying childrens' responsonses to the questions are much more important than the accuracy of the answers (Fisher, 1990:7). This understanding emphasizes the significance of learning process (why children are engaged in learning activity and how they learn).

In constructivist approach, the individual organizes and shapes the world into a structured whole by interpreting experience. This view has been supported by Piaget's well-known statement: "Intelligence organizes the world by organizing itself (1937)" (Glasersfeld, 1982). Major principles of Piaget's understanding are:

1. Knowledge is not passively received either through the senses or by way of communication. It is actively built by the cognizing subject.
2. The function of cognition is adaptive, tending towards viability. Cognition serves the subject's organization of the experiential world, not the discovery of an objective ontological reality (Glasersfeld, 2003).

The model of *action scheme* constitutes the foundations of Piaget's learning theory. In this model, knowledge is seen as a collection of schemes of action and models of thinking and a tool which enables individuals to live and act in the world as they experience it. In this theory, the basic principles are *assimilation* and *accomodation*. The mind assimilates and categorizes a recognized situation which manifests certain characteristics that has been abstacted in the course of prior experience. If the expected result does not occur, the organism's equilibrium is disturbed and accomodation occurs, which leads to the formation of a new action scheme. The notion of accomodation is significant for education, since it provides a mechanism for learning (Glasersfeld 1997).

In other words, each child has mental schemes for particular situations or information depending on her/his prior experiences. If she/he encounters a recognized situation, she/he incorporates it into her/his already existing schemes. Assimilation is "the active construction of external data to fit the child's existing schemes". If she/he encounters an unrecognized situation, she/he cannot incorporate this information into her/his current scheme. Accomodation is also an active process and occurs as a result of modification of existing schemes (Bjorklund, 1995:59).

Reflective abstraction is the third principle in Piaget's learning theory. Reflection can be defined as "the ability of the mind to observe its operations". Abstraction can be described as making sense of and organizing experiences (Glasersfeld, 1983). Reflection can be identified as an activity applied to complex issues whose results are indefinite and can be anticipated. Reflection is often a process of re-organizing knowledge and emotional orientations in order to achieve further insights (Moon, 2005:82). According to Moon's definition:

> Reflection is a form of mental processing – like a form of thinking – that we may use to fulfil a purpose or to achieve some anticipated outcome or we may simply 'be reflective' and then an outcome can be unexpected. Reflection is applied to relatively complicated, ill-structured

ideas for which there is not an obvious solution and is largely based on the further processing of knowledge and understanding that we already possess (Moon, 2005:82).

These principles of Piaget's learning theory, assimilation, accommodation and reflective abstraction, explain the process of acquiring knowledge. Since there is a diversity of prior experiences among students, these mechanisms process in different ways for each particular student. Each student acquires and interprets knowledge in different ways. Teachers should adapt their educational strategies according to each child's background and prior knowledge. This theory focuses on underlying mechanisms that drive the process of learning rather than achieving a predetermined outcome.

b. Social constructivist: Lev Vygotsky and Socio-Cultural Theory of Learning

Vygotsky introduced sociocultural theory of learning in the field of education. Traditional approaches to learning which viewed the child as "passive recipient of prepackaged knowledge" was replaced by a dominant view that defines children as "independent agents of acquisition". Vygotsky claimed that "independent exploration often led to the acquisition of immature concepts and neglect of important social skills" (Kozulin, 2003:16). He introduced the concepts of mediation, scaffolding, apprenticeship, and organization of learning activities.

According to Vygotsky, children's higher mental processes develop through their interaction with their environment by the help of mediating agents. He described two types of mediators. First is the human mediator which involves parents, teachers, more capable peers, etc. The second is the symbolic tools (such as language, signs, symbols, writing, formulae, etc.) which are internalized by children during the process of education or other sociocultural activities. The acquisition of these symbolic skills requires guidance provided by human mediators (Kozulin, 2003).

Vygotsky's ideas are influential in shaping the learning processes in education environments, mainly in Russia, Europe and the United States. He views human cognition and learning as social and cultural phenomena. He views knowledge as concept formation rather than information and defines knowledge production as a social process. He views teachers as mediators rather than sources of knowledge who transmit abstract knowledge and students as

culturally and socially situated learners rather than identifying them by their age and IQ. His theory provides a deeper understanding of social and cultural underpinnings of education environments. His ideas can be adapted to different educational contexts where diverse learners receive education (Kozulin et. al., 2003: 1, 2).

Vygotsky assumes that there is a strong relationship between learning and development. "Learning in its systematic, organized, and intentional form appears in sociocultural theory as a driving force of development, as a consequence rather than a premise of learning experiences" (Kozulin, et. al., 2003:5).

Vygotsky places a central role on the importance of assistance provided by more experienced members of the society in the education of children. He emphasizes the significance of the role of parents, teachers, peers and the community in defining the relationship between children and their environment. Children learn cognitive and linguistic skills from more capable caretakers, peers, and teachers and use the appropriate cognitive and communicative tools in culturally appropriate ways (Gauvain, 2001; Kozulin, et. al., 2003; Russell, 1999). As children interact with these people their higher mental functions develop. More capable members introduce children more complex concepts and activities which are above children's actual capacities and encourage them to acquire higher skills by assisting them during this learning process, therefore guiding their development. Collaboration with other experienced participants is an important factor in childrens' development.

> Interaction in the child's zone of proximal development involves exposing children to increasingly more complex understanding and activity than they are capable of on their own. Thus, the more experienced partner encourages and supports a child in using his or her current capabilities to extend the child's skill to higher levels of competence. New ways of thinking are first experienced collaboratively; only after this collaborative experience are they experienced individually. In other words, understanding occurs initially on the social plane and then later, after the child internalizes this understanding, on the individual plane. Thus, for Vygotsky, learning precedes development as the interpsychological becomes the intrapsychological (Gauvain, 2001: 35).

Vygotsky introduced the term *zone of proximal development* into the terminology of education. The term denotes the difference between children's actual level of learning/problem solving skills and their potential level of higher level cognitive functioning

skills. Gargiulo and Metcalf (2010:185) claim that if students are engaged in challenging learning activities within this zone, their motivation increases.

Vygotsky contributed to the field of special education. He revealed that "disability varies psychologically in different cultural and social environments" (Kozulin, et. al., 2003:7). He introduced concepts of primary disability (organic impairment) and secondary disability (distortions of higher psychological functions due to sociocultural factors). An organic impairment prevent the child achieve knowledge "at a proper rate and in a socially acceptable form". The child's social environment modifies her/his course of development and cause delays during learning process. Low expectations and negative attitudes of the society prevent children with disabilities from accessing to "sociocultural knowledge, experiences, and opportunity to participate in shared or joint activities with peers" (Gindis, 2003:203).

Vygotsky claimed that special education should aim to develop higher psychological functions and overall personality by focusing on childrens' strengths rather than identifying them with their weaknesses. He insisted that negative attitudes towards people with disabilities should be changed in favor of a search for positive capacities of children with disabilities during upbringing and educating them (Gindis, 2003:203, Kozulin, et. al., 2003:7). .

Vygotsky's ideas about inclusion of children with special needs into general education system shifted from one which emphasized being in the same classroom at the same time towards a sociocultural concept of integration. According to him, real integration can be achieved through providing similar curriculum content by the help of adapting specific teaching methods, providing extra adult support and extra time (Gindis, 2003:213).

Vygotsky's idea that society plays an important role in determining children's development has great implications for the education of children with special educational needs and for inclusive education. First, negative attitudes towards people with disabilities and identifying people with their weaknesses should be changed. Second, adaptations should be made in the educational programmes in order to focus on children's particular strengths and ensure them to achieve their best during the process of accessing knowledge that is differentiated according to their particular needs and interests. These can be best achieved through

implementing the *process-based and student-centered* principles of inclusive education system denoted in the legislations such as choosing the most appropriate education environment for children with special educational needs, making organizational adaptations in the education environments (adapting curriculum and teaching practices), preparing Individualized Education Programme (IEP), providing collaborative team study and school-centered supportive services and making adaptations in the physical education environment.

3.2.2 Multiple Intelligence Theory

Gardner's theory of *multiple intelligences* questions the adequacy of the traditional conceptualization of knowledge and intelligence. He has criticized traditional schooling which heavily favors the verbal-linguistic and logical-mathematical intelligences and assesment measures which classify children in terms of intelligence (IQ tests which value only linguistic and mathematical abilities).

Gardner claims that there are children who are gifted in other areas. These students are excluded from the general education system rather than receiving the education that could enhance their special abilities. He suggests that there are at least seven ways that students have of perceiving and understanding the world[8]. These inteligences are classified as:

1. verbal-linguistic (the ability to use words and language)
2. logical-mathematical (the capacity for inductive and deductive thinking and reasoning, the use of numbers and the recognition of abstract patterns)
3. visual-spatial (the ability to visualize objects and spatial dimensions, and create internal images and pictures)
4. bodily-kinesthetic (the wisdom of the body and the ability to control physical motion)
5. musical-rhythmic (the ability to recognize tonal patterns and sounds, as well as a sensitivity to rhythms and beats)
6. interpersonal (the capacity for personal communications and relationships)
7. intrapersonal (the spiritual, inner states of being, self-reflection, and awareness) (Bjorklund, 1995; Russell, 1999; Udvari-Solner and Thousand, 1995).

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[8] Later, the eighth intelligence area "naturalist" is added to seven intelligence areas that Gardner proposed.

Gardner claims that each form of intelligence is attributed different meanings and values by different cultures at different times in history. He provides a broader definition of intelligence and places intelligence in the realm of both biology and culture. He claims that the other types of intelligences are as important as the linguistic and mathematical abilities and should be assessed through different measures. All types of intelligences are flexible and can be enhanced through education (Bjorklund, 1995).

The theory of multiple intelligences has important implications for inclusive education and curriculum, since it values diverse ways of understanding. Gardner advocates educational approaches that appeal to all of the intelligences, including role playing, musical performance, cooperative learning, reflection, visualization, story telling, and so on (Russell, 1999).

Gardner expanded the concepts of cognitive development suggested by Piaget. He notes that individuals have different strengths in each intelligence areas and each individual can be at different stages of development in these areas at any given time. In addition to the intelligence areas, Gargiulo and Metcalf (2010:189,190) claim that sensory preferences are also significant in learning. Students have particular strengths in the visual, verbal, auditory, tactile and kinesthetic areas.

Table 3.1 Learning characteristics and tools depending on different type of learners

Type of Learner	Learning Characteristics	Learning Tools
Visual/Verbal	Prefers receiving visual information paired with print, visualizes information to be learned, likes to study in quiet room	Lecture with overhead Textbooks Class notes Outlines
Tactile/Kinesthetic	Prefers "hands-on" learning, active, learns through physical movement	Demonstration teaching Field experiences
Visual/Nonverbal	Prefers information presented visually, may be artistic, tends to prefer a quiet room rather than study groups, uses visual pictures to remember	Visual aids such as video, maps, charts, diagrams, pictures, film
Auditory/Verbal	Prefers listening to a lecture, learns best through interaction with others- exchanging ideas, uses what is heard to remember and may repeat information out loud	Group discussion Audiotapes

Adapted from R. M. Gargiulo and D. Metcalf D., *Teaching in Today's Inclusive Classrooms: A Universal Design for Learning Approach.* Wadsworth: Cengage Learning. International Edition, 2010, p. 191 and S. Winebrenner, S., *Teaching Kids with Learning Difficulties in the Regular Classroom,* Minneapolis: Free Spirit Publishing Inc., 1996, p. 53.

According to learners' diverse learning preferences and capabilities, learning characteristics (the methods to be used during education) and learning tools can be identified. Identification of diverse learning capabilities has significant implications for inclusive education. An effective learning environment which provides educational strategies that cater the requirements of diverse learning capabilities depending on learning characteristics can enable the inclusion of all children.

3.2.3 A Recent Approach: Universal Design for Learning

A recent approach *Universal Design for Learning (UDL)* develops the idea of constructivist approaches and multiple intelligence theory further. It provides a new understanding in curriculum design which caters the needs of all learners. UDL is a framework for teaching, learning, assessment and curriculum. It requires a comprehensive education plan which is initially designed with the students with diverse capabilities and special needs in mind, in order to enhance opportunities of inclusion of all students into general education system (Gargiulo and Metcalf, 2010:183).

Universal Design, although a concept from architecture and planning fields, began to be applied in education. Researchers, who recognize the benefits of *meeting the needs of a particular group of people generates design solutions that enhance accessibility of a wider range of user groups* (CEBE, 2002:10), borrowed the principles of Universal Design and apply them to educational programmes in order to improve access to education.

> These design principles benefit many students with a variety of needs within the learning environment. For example, the curb cuts in sidewalks help not only those students/teachers who use wheelchairs, but also those who wheel book bags/computers into buildings. Recorded books designed for the blind have benefited many other students who have difficulty reading or simply paying attention to what is read. Recorded material also allows students to listen to required "reading" while in their cars, biking, or walking. Pens with soft grips originally designed for people with fine motor difficulty are becoming commonplace in office supply stores because they are more comfortable for everyone to use (Gargiulo and Metcalf, 2010:183,184).

Universal Design is becoming important in inclusive educational practices depending on the belief that it can "promote the effective implementation of inclusion and provide access to

the general education curriculum" (Mcguire et al., 2006:167). There are several models of educational applications of Universal Design. Mcguire et al. (2006) acknowledge the demand for establishing a conceptual foundation for grounding Universal Design construct in educational environments.

> Given the strong intuitive appeal of Universal Design and the early public and legislative interest in Universal Design applications, attention to the process of theory development is timely and important for the rigorous exploration of Universal Design in educational settings (Mcguire et. al., 2006:168)

Universal Design for Learning claims that the schools should provide flexible options in order to ensure diverse group of learners have equal opportunities to learn from the start. Assuming that children have different strengths in different intelligence and sensory areas, are in different stages of development and have different abilities/disabilities and special needs, educational services and information should be provided to students in different ways.

Table 3.2 Essential qualities of Universal Design for Learning

Multiple Means of Representation	Multiple Means of Engagement	Multiple Means of Expression
Offers flexibility in ways of • … presenting, receiving, interpreting information • …adapting for different languages, learning styles, multiple intelligences, cognitive stages of development, sensory needs, perceptual differences, social needs • …adjusting the complexity of material presented • …adjusting environment so all can see, hear and reach	Offers flexibility in ways of • … customizing the affective network systems in learning to increase participation • …adjusting for student interests and cultural backgrounds • …arranging the environment to allow for variety in grouping arrangements, individual work, and access technology and other materials • …using human resources in the classroom and school	Offers flexibility in ways of • … how students respond to information presented • … providing output formats that can be changed easily to accomodate preferred means of control (perceptual, sensory, motor control) • …using different cognitive strategic systems • …tracking progress of students • …identifying areas of strengths and needs • …assessing knowledge of content

Adapted from R. M. Gargiulo and D. Metcalf D., *Teaching in Today's Inclusive Classrooms: A Universal Design for Learning Approach.* Wadsworth: Cengage Learning. International Edition, 2010, p. 192.

There are three essential qualities for UDL approach to be considered during planning the education programme and curriculum (Table 3.2). The first quality is *multiple means of representation* which is about providing students a variety of ways to receive and interpret information depending on students' learning preferences and capabilities. The understanding of children's means of representation will help teachers to adapt their educational practices and learning materials according to their students' capabilities and needs. The second quality is *multiple means of engagement* which is about engaging and motivating students, and explaining why they need this information. The understanding of children's means of engagement will help teachers to find ways in increasing their students' motivation. The third quality is *multiple means of expression* which is about students' different ways of responding to the information they received. The understanding of children's means of expression will help teachers to assess their students' learning process.

Universal Design for Learning has a potential for broadening the notion of inclusion in education environments. It is based on the idea that all educational adaptations are centered around students' particular capabilities and needs. It also focuses on the process of accessing knowledge through multiple modes of presenting information, engaging students through increasing their motivation and assessing their learning process.

3.3 Broadening the Notion of Inclusion

This study considers inclusion more than a moral imperative, and tries to center the notion onto a common framework within the interface of education and architecture. These two disciplines are the two sides of inclusive education and have a complementary role in supporting inclusion in schools.

As the education environment limits the full-participation of students and the way a subject is taught/learned through presenting one way of planning, delivering, engaging and assessing learning, the number of diverse learners increase (Gargiulo and Metcalf, 2010: 180). The concepts of Least Restrictive Environment, and Individualized Education Programme and the demands for adapting the curriculum, education programme and physical education environment are the issues that mark the paradigm shift in education. This study claims that these issues can help us to reconceptualize environment in education and to view self-environment interaction in a new way.

The developing interest for inclusion of all diverse groups of children in general education system brings about some ambiguities about the notion of inclusion in education. This study provides a broadened understanding regarding the very mission of inclusive education practice by referring to legislations and takes the issue of inclusion beyond its literal understanding. Depending on the comparison of literal and broadened understanding of inclusion, this study aims to describe the process of inclusion of diverse individuals into the education environment and proposes two models for conceptualizing self and environment interaction in inclusive education.

3.3.1 Development of a Conceptual Model: Towards Broadened Understanding of Inclusion in Education Environments

The long-standing tradition of integrating children with special needs in regular classrooms demanded children to adapt themselves to their environment. This approach problematizes the individual and forces the boundaries of the self rather than questioning the barriers in the environment which disable the individual. This leads to isolation of the self from the environment which does not provide equitable use for all the members of a society.

First model clarifies the literal understanding of inclusion and self-environment interaction (Figure 3.1). Literally, inclusive education is viewed as accomodating all children in the general education environment without any school restructuring. In this model, all diverse selves with particular needs and interests are being introduced into the same environment (to be melted in the same pot) through being forced to adapt themselves according to the requirements of the system. Environment refers to the overall education system whose boundaries are static and fixed. Each self, whose boundary is blurred, can exist in the system by proving her/his readiness to be accepted into the environment.
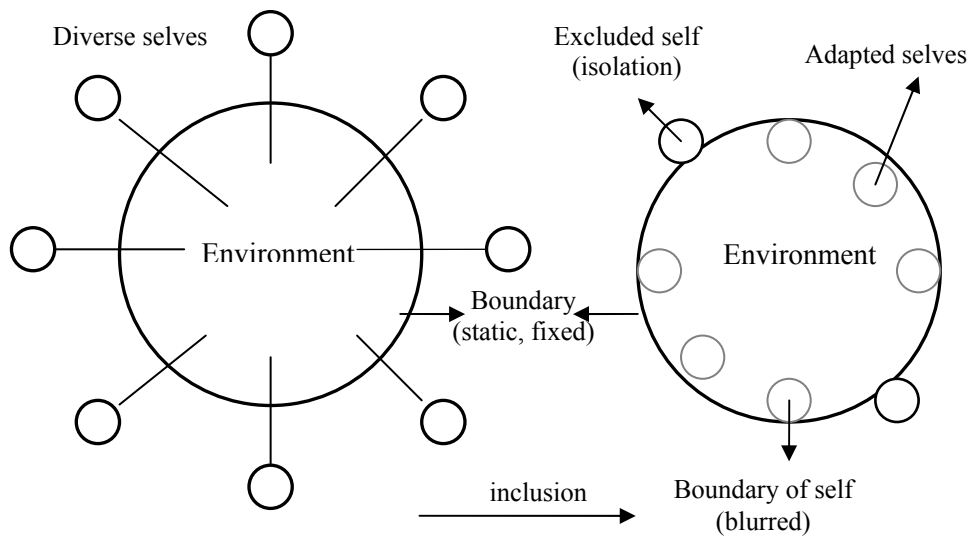
Figure 3.1 Literal understanding of *Inclusion*

The revolutionary idea of educating children with special needs in regular classrooms through the delivery of essential services compatible with their particular needs and capabilities, demands an environment which enables all children's democratic participation and equitable access to educational facilities. This understanding questions the barriers in the environment which disable the child and tries to adapt the whole schooling system to the requirements of each child. This leads to integration of each individual to the education environment easily and ensures the child to enhance her/his capabilities to the maximum extent possible.

Second model provides a broadened understanding of inclusion which denotes a new way of understanding the relationship between self and environment in education environments (Figure 3.2). The environment can be conceptualized as the Least Restrictive Environment which is determined according to each individual's particular special needs with the necessary adaptations in curriculum and educational programme in order to achieve the educational goals that are determined individually for each student in an adapted physical environment. In this understanding, the boundaries of the environment blur. The boundaries of the self remain unchanged and reinforced with additional supportive services provided for each child's particular needs.
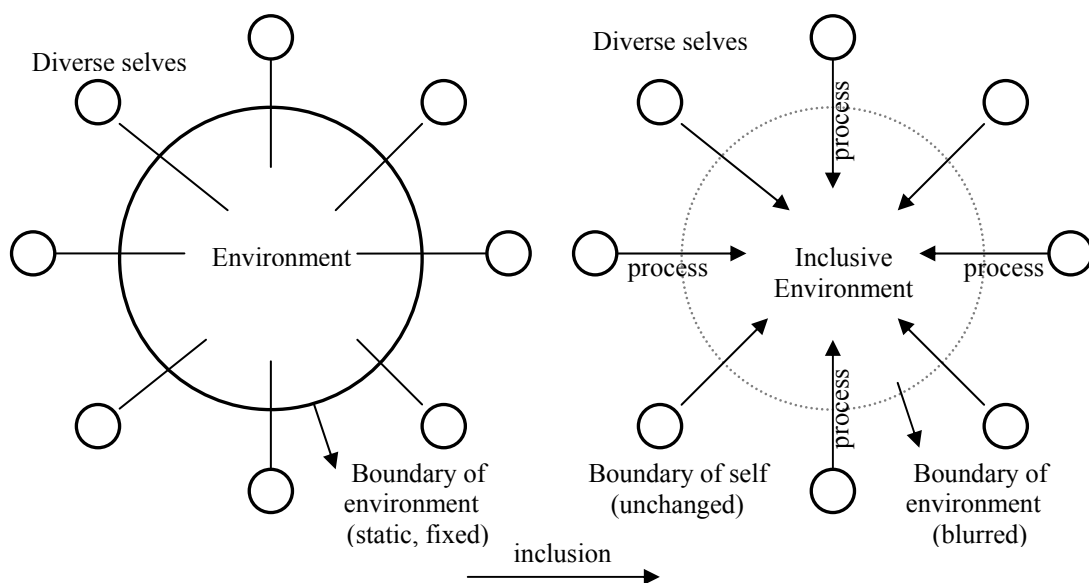
Figure 3.2 Broadened understanding of *Inclusion*

3.3.2. Developing Process-based and Student-centered Understanding of Inclusion

Inclusive education system recognizes that each individual has particular abilities, needs and interests, therefore requires access to knowledge through multiple modes of learning. Promoting equal opportunities in education is not ensuring every student access to the same amount and content of knowledge in the same way. *Promoting equal opportunities in education* means ensuring each unique student access to the necessary amount and content of knowledge in one of the ways that is in line with the particular student's capabilities. Inclusion in education is an ongoing process. Rather than ensuring students' access to an immediate knowledge which is presented by the teacher during school hours, *inclusion aims at a process-based and student-centered integration of individuals* who develop capacities and achieve their full potential during the process of accessing the knowledge presented in the education environment, not only limited in the classrooms, in a multiple means of representation, engagement and expression (which are the essential qualities of Universal Design for Learning which is based on the constructivist theories of learning and multiple intelligence theory).

This study aims to show the relationship between three parameters of inclusive education environments (Figure 3.3). The first parameter is students, this group involves diverse groups of individuals with particular need and interests. Their diversity depends on the type of the

learner and special educational needs. The second parameter is the education system. There are multiple ways of ensuring equal opportunities in the education environment. During the process of inclusion, children can access different amount and content of knowledge through using different learning materials, adapted curriculum and individulized education programmes by the collaborative efforts of a variety of professionals who are equipped to provide school-centered supportive services for children's particular needs and interests. There are multiple modes of engaging children during the learning process, presenting information to children, assessing their performance and different ways for children to interpret and represent the knowledge. The third parameter is the physical environment, where teachers implement their teaching practices and adapt educational programmes according to specialized needs of children. It is identified as complementary to the inclusive education process. This study assumes that Universal Design principles should be differentiated according to the *process-based and student-centered understanding of inclusion*, in order to lead effective design approaches for inclusive education environments.
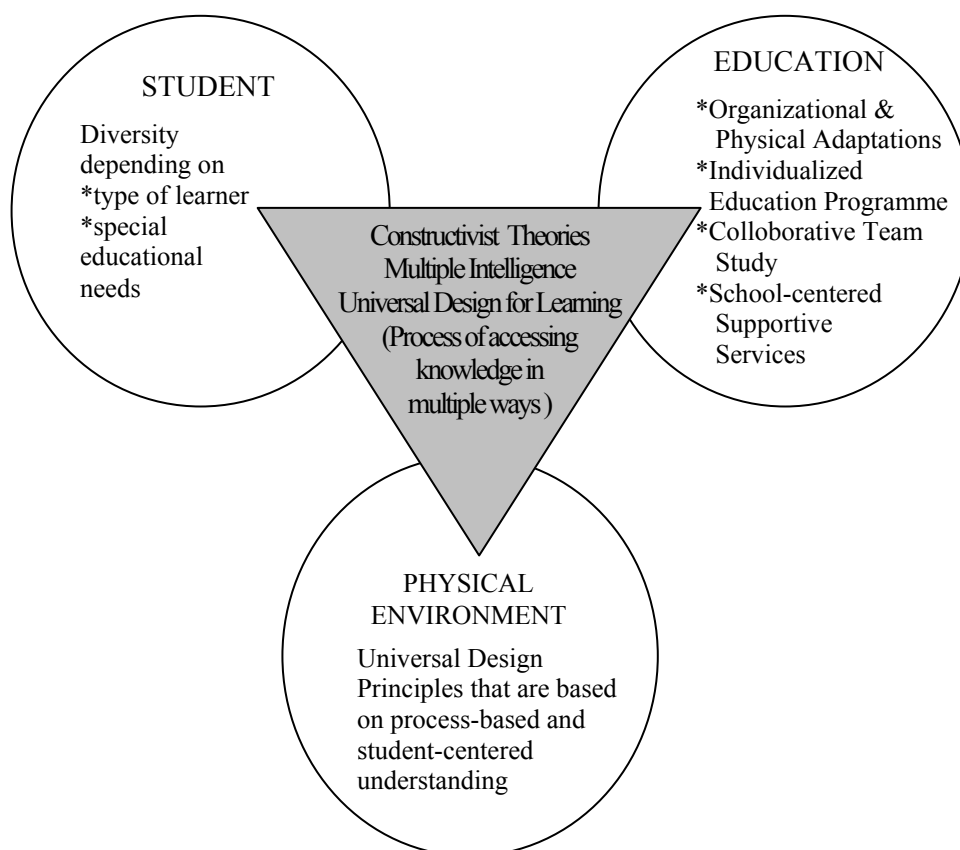
Figure 3.3 Relationship between the parameters of an inclusive education environment

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CHAPTER 4

UNDERSTANDING THE PRACTICAL CONCERN OF INCLUSION
IN INCLUSIVE EDUCATION ENVIRONMENTS

In recent years, major reforms in education systems worldwide are realized. One of the important milestones of these reforms is the education of children with special needs in classes appropriate to their age with their peers through inclusion. In the early 1980s, legal arrangements that enable adaptation of people with disabilities and special needs to the society and their participation in the process of social production formed the basis of inclusive education.

Parallel to the emphasis on learner differences and diversities in inclusive system in education, Universal Design in architectural and product design becomes prominent in recent years, as an approach which celebrates diversities and values a design process for all. This thesis assumes that architectural design and education can promote each other in the course of accomodating an inclusive educational approach in schools and aims to develop a common framework for education and architecture through re-consideration of Universal Design principles.

The concepts, themes and practices in the legislations and literature related to inclusion in general, in education and architecture have been outlined so far. The theoretical knowledge-base derived from the legal framework of inclusive education needs support from the field of practice in education, in order to develop a clear understanding of the core and the mission of inclusive education and eliminate the misunderstandings regarding this issue. Therefore, a case study has been carried out in two schools, one from Turkey and the other from United Kingdom, in order to describe the practical concern of inclusive education in education environments.

Frequently, majority of primary schools refer the notion of inclusion, as a de rigueur mission statement, for legitimatizing their educational practices. However, their understanding and implementation of inclusion remains far from fulfilling the necessary standards for inclusion. This condition limited the possibility of finding the appropriate institution, for the scope of this thesis, which indeed practices inclusion. The criterion for involving the two schools into this study is their introduction of an inclusive ethos into their educational practices which approximate the requirements denoted in the legislations.

Teachers' critical views and ideas about their teaching process and their use of education environments are significant in order to understand the practical concern of inclusion in inclusive education environments. The basic purpose of this study is to obtain information from teachers related to their views about suitable education environments that can accomodate inclusive education system and to find out answers to the questions regarding the use of spaces in the school. Information related to the architectural design of these schools has been described in order to reveal the conditions of education environments where inclusive practice is adopted.

The interpretation of the information obtained from this qualitative study intends to contribute to architects' prestructuring the design problem regarding inclusive education environments. Generative design parameters for the briefing stage of school design are assumed to flourish in the light of broadened definition of *inclusion* which is *process-based* and *student-centered* as well as *inclusive education* and through the differentiation of the principles of Universal Design with a critical standpoint.

Prior to the interviewing process, a preparation phase took place. The researcher applied to *METU Human Researches Ethical Committee* in order to conduct research according to academic and ethical rules and filled some forms which acknowledge the aims, methods, tools, interview questions and expected results of the study. These forms are:

1. Ethical Committee Application Form (Appendix A)
2. Ethical Committee Project Information Form (Appendix B)
3. Ethical Committee Informed Consent Form (Appendix C)
4. Ethical Committee Debriefing Form (Appendix D)
5. Data Collection Tools: Interview Questions (Appendix E)

6. Interview Questions (in Turkish) (Appendix F)

After having the approval of *METU Human Researches Ethical Committee* (Appendix G), the researcher started the qualitative inquiry by posing interview questions to the participants.

In this qualitative study, data collection tools are the interview questions which were prepared according to a pilot study carried out in a general education primary school environment. Although the school selected for the pilot study was implementing inclusive education practices, the diversity among students were not recognized much among teachers and educational practices were not diversified in order to provide students multiple options in accessing the curriculum. Initial questions were reorganized and criteria for selecting schools for interviewing teachers were determined according to the pilot study.

The qualitative study in this thesis aimed to support the theoretical and legislative context of inclusive education, in order to reveal its practical concern. The selected schools aimed to:

1. implement inclusive education principles denoted in the legislations,
2. provide their students multiple means for achieving knowledge in an effective education environment,
3. center all school facilities, learning resources, curriculum and professionals around students' capabilities and needs,
4. reinforce students' capabilities during the learning process
5. provide school-centered supportive services and rehabilitation facilities
6. provide additional community facilities

There was a limited possibility of finding the appropriate institution which fulfills all of the necessary standards for inclusion in Turkey. The researcher consulted to academicians from the field of education and was acknowledged that *Gökkuşağı Primary School* could be assumed as an ideal education environment depending on the four criteria determined by the researcher. This school is providing education to students with and without disabilities. The students with special educational needs have multiple disabilities (cerebral palsy). Most of these students require the provision of additional supportive education and therapy services. There is a rich diversity among students in terms of their capabilities, needs and interests.

There are different professionals working in the same education environment (general education teacher, special education teacher, advisor, learning assistant, etc.). Families are incorporated into the education system, monitor the development of their children and help them with their special needs. Students with and without special needs are educated in the same classrooms where peer support is highly valued. Until the 2009-2010 academic year, there was a therapist in the school who was giving rehabilitation services to children with special needs. There was also a physiotherapy room for providing therapy services. However, in the 2009-2010 academic year, a therapist has not been commissioned to the school. The room, which was once used for supportive services, is not being used anymore. The school provides parents training courses and local community additional facilities out of school hours.

There are ideal inclusive education environments worldwide, especially in United States and United Kingdom. The researcher access to some of these schools websites and sent e-mail in order to understand if the teachers can answer the interview questions. A Special Education Coordinator from *Millennium Primary School* in United Kingdom responded the mail. After receiving the interview questions, she wrote down the answers and sent back to the researcher via Internet. She also gave information regarding the architectural design of her school. Millennium Primary School provides education to students with and without special educational needs. The students with special needs have Autism Spectrum Disorder. There is a Health Center adjacent to the school which provides therapy services to students with special needs in the school and medical services to the local community. The school also provides additional community facilities out of school hours.

At the beginning of the interviewing process, the aims of the study are explained to the participants. The participants are informed that this study is based on voluntary participation completely and does not include factors threatening their physical and/or psychological health or is a source of stress for them. The participants are not asked to give any identifying information. Turkish participants were informed before the interview that their responds would be recorded on voice recorder and the data obtained from the interview would only be evaluated by the researcher.

Data collection tools in this study are the open-ended interview questions which are divided into four parts:

1. Section A involves questions which are about teachers' educational experiences. These questions are posed to understand whether the teachers are general education or special education teachers or other and whether they have training about inclusive education.
2. Section B involves questions in order to understand teachers' ideas about inclusive education and to understand general principles of inclusive education through eliciting their educational practices.
3. Section C aims to reveal the use of physical environments in the school and to understand teachers' ideas about ideal education environments.
4. Section D provides opportunity to teachers to explain their suggestions and expectations regarding physical education environments.

In-depth information is obtained from participants through interview questions. The answers are recorded with voice recorder and the recordings are uploaded to a computer. The auditory files are analyzed, interpreted and written down through digital media.

4.1 Identifying the Participants and their Professional Experiences

In order to identify the participants and their professional experiences, the questions in the **Section A** are posed to teachers. Teachers are asked to identify their area of expertise, the duration of their educational experiences. Information regarding teachers' participation in in-service training seminars about children with special educational needs and inclusive education is obtained, in order to understand if they are eligible to give relevant answers to the questions covered in the following sections of the interview.

Interviewee 1 is a *general education teacher* since 1997 (for 13 years). She has been teaching in *Gökkuşağı Primary School* in Ankara, Turkey for the last four years. She has attended in-service training seminars on children with mental retardation. She has also attended meetings and seminars about inclusive education, the school arranged for the teachers. She acknowledges that the practice of inclusive education in her school is the best model in Turkey.

Interviewee 2 is a *special education teacher* since 1991 (for 19 years). She has been teaching special education classes in *Gökkuşağı Primary School* in Ankara, Turkey for the last three years. She is an expert on students with mental retardation. Before coming to this school, she has been teaching students with cognitive difficulties in special education institutions. She has participated in training programmes about inclusive education during her education and after her graduation.

Interviewee 3 is a *special education teacher* since 2000. She worked in special education schools for 5 years. She was responsible for the disabled student affairs in the Ministry of National Education for 5 years. She has been appointed to *Gökkuşağı Primary School* in Ankara, Turkey as the vice-principal of the Early Childhood Education Center in the second semestre of 2009-2010 academic year. She is responsible for administrative affairs in this school. She is an expert on students with mental retardation. She has a master's degree and is preparing a doctoral thesis about children with cognitive difficulties. She took courses about inclusive education. She presented two papers on inclusion in scientific congresses. While working in the Ministry of National Education, she was one of the officials who were charged with providing 30-hours in-service training course on inclusion for teachers in the 2009-2010 academic year.

Interviewee 4 is a *general education teacher* since 1994 (for 16 years). He is the vice-principal of Special Education in *Gökkuşağı Primary School*. He attended 30-hours-in-service training on special education. He has practiced inclusive education in this school in special education classrooms and resource rooms.

Interviewee 5 is a Special Educational Needs Coordinator in *Millennium Primary School*, in United Kingdom and a member of the School Leadership Team. She has been practising since 1981 and participated in training about inclusive education.

4.2 Teachers' Critical Views and Ideas about Inclusive Education Practice

The aim of the questions posed in **Section B** is to draw on teachers' views of their own inclusive education practices. The questions in this section intended to understand how teachers identify the most prominent differences that distinguish *inclusive education* from *special education* and *traditional education system*.

Interviewee 1

- *Increased responsibility of the teacher*

"Special education is a long-term process. Children with cognitive difficulties learn in a long time. Their progress is slow and they have difficulties in expressing what they learn."

- *Teachers' openness to cooperation (cooperation among general education teacher, special education teacher, advisor)*

"There are three types of education experts who are responsible from the education of students with special education needs. These are general education teacher, special education teacher and advisor who cooperate regularly in teachers' meeting room or advisor's room. The main problem of general education teachers is the lack of an assisting teacher in their classrooms. In general education classrooms, there are generally twelve students, three-four of them are with special educational needs. However, there is only one teacher. We send our students with special education needs to resource rooms for two hours in a week. These students study with special education teachers in these rooms according to their academic performance levels and in line with the studies in these students' general education classrooms. Special education teachers and general education teachers cooperate for supporting these children. In special education classrooms, there are six students with special educational needs, there is one special education teacher and one assisting teacher. General education teachers also invite special education teachers in their classrooms when they have problems, or sometimes general education teachers send their students with special needs to special education classrooms for one or two hours. Individualized Education Programmes are prepared for children with special educational needs."

- *Individualized Education Programme (IEP) for children with special educational needs*

- *Families' openness to cooperation and participation*

"Teachers cooperate with families of children with special needs, who are the participants of the school. There is a family waiting room on the first floor. The families take care of their children at break times. The teachers invite families in the classroom if they see necessary."

- *Common misunderstanding about inclusive education*

"Opinions regarding inclusive education generally focus on the problems of children with disabilities. This understanding caused problems when this school was first opened. There were reactions among the children without special educational needs and their parents depending on this misunderstanding. Some of the children drop out of this school and registered to another school. In time, this misunderstanding disappeared. We received support from special education teachers and advisors. They acknowledged general education teachers, students and their families about inclusive education. Students learn about inclusion and learn how to participate in the same education environment with their peers with disabilities through experiencing. In addition to this, now children without special educational needs achieve as good as their peers in other schools in terms of academical and social performance."

- *Children are socialized naturally, they acquire social skills, social and ethical values*

"Children cannot acquire these skills in a traditional education environment. Children help their peers with special educational needs automatically and intentionally. These skills can be acquired with neither the remarks of the teachers nor the guidance of the families, but rather through experiencing. Guidance and Counselling Service in the school has applied a UNICEF project. Children write their good behaviors on a paper and throw it inside a small box. When this box is opened, the best behaviors are rewarded in front of their peers. In this way, all children in the school are encouraged to help their peers. Peer support is higly valued."

- *One of the long-term objectives of inclusive education is to raise awareness on people with disabilities among the new generation*

"The aim of the school organization is to enable children without disabilities to produce projects regarding people with disabilities, in the future, when they hold a degree and have senior executive positions in the society. In this school, children without disabilities live and learn together with their peers with special educational needs. Guidance and Counselling Service acknowledges these children and their families about special educational needs. Thus, they naturally become sensitive and aware of the significance of inclusion in time through experiencing."

Interviewee 2

- *The necessity of a pre-determined educational programme (Individualized Education Programme)*

"Inclusive education is a system which should be implemented according to a pre-determined educational programme. An Individualized Education Programme (IEP) should be prepared for each student with special educational needs and the educational practice should be in line with this programme. There have been always students with special educational needs in general education classrooms. Since these students attend to schools without being identified, they are not being instructed according to an appropriate education programme. Without an Individualized Education Programme, these children do not have the chance of achieving high academic performances. Therefore, they are labeled as lazy and inattentive by their teachers, peers and even their parents, and they are being excluded.

- *The significance of a cooperative teaching method in general education classrooms*

"In order to promote inclusion in general education classrooms, there should be a special education teacher assisting general education teachers in the classroom during both developing the educational programme and implementation. While the general education teacher lectures in line with the curriculum, special education teacher should assess how much the students learn, determine the students' weaknesses and should provide supportive education services to students with special educational needs. However, there is not such practice in Turkey now. In our school, although there are three or four students with special educational needs in general education classrooms, the teachers are alone while practising inclusive education. Special education teachers assist them in developing the educational programme, however this is not sufficient. Despite these problems, there is more cooperation among general education teachers, special education teachers and advisors in our school when compared to other schools in Turkey."

- *The significance of special education classrooms in general education schools as a preparation phase prior to inclusion*

"In special education classrooms, students without behavioral disorders and with acceptable level of academic performance can be placed into the general education classrooms in the following academic year. There are two students in my classroom. I oriented them to the Guidance and Research Center, where they will be assessed. Depending on this assessment,

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they will either continue in a special education classroom, or placed in a general education classroom for part-time or full-time inclusion. If they are placed in a general education classroom, they will begin from the suitable grade in line with their age."

- *The significance of deciding who will benefit from the general education*
"There is one student in my classroom with speech disorder. Depending on cerebral palsy, he cannot use his hands. I assume that he does not have cognitive difficulties. He began reading early before the other students in the classroom. However, he cannot express himself. If he is placed in a general education classroom, he will not benefit from the education there. The teacher will not assess his academic level since he cannot express what he learnt. There should be accessible technological devices for enabling him express himself, however these devices are not affordable, since they are too expensive. I use special education methods (through using pictorial cards) for him to assess what he learnt. This process advances slowly."

- *Families' openness to cooperation and participation*
"In special education classrooms, we always include families into the lectures in order to enable them to understand how we teach and to help their children review the lesson in the house in the same way as we do in the classroom. I show the families the practice and how to use the educational materials. We can also meet the families in the waiting room on the first floor."

- *The significance of physical environments in promoting inclusion*
"We used corridors for promoting inclusion. Last year, we placed toys in specific locations in the corridors in order to enable all students with and without special educational needs to play together. We think that such practices are necessary and should be formally applied in schools."

Interviewee 3

- *Differences in target groups*
"The target group in general education is students with average cognitive skills. Inclusion is about providing supportive services which is practiced with specially equipped staff and with

special educational materials. The target population in inclusive educattion is the students whose cognitive skills are below the average."

- *Teachers' role in making educational adaptations for students with special educational needs*

"A student with cognitive difficulties should receive education in line with her/his own academic performance in the same learning environment with her/his peers. Teachers should develop their educational adaptation skills. Children have varying levels of academic performances and limitations. Teachers should learn to make adaptations through considering children's individual differences and multiple intelligences. The contemporary National Education circulum is adapted in line with the multiple intelligence theory that is developed by Gardner. However, adaptation will take time, since most of the teachers are trained according to the classical education system. "

- *The significance of preparing Individualized Education Programme*

"General education teachers should learn the characteristics of children with special educational needs in order to prepare an Individualized Education Programme."

- *The necessity of coordination between the school and institutions which provide additional supportive services*

"In our school, the students with special educational needs have multiple disabilities. Most of them have both cognitive and orthopedic limitations. Most of the students with cognitive disabilities also have language and speech disorders. Thus, these students require the provision of additional supportive services such as speech therapy and physiotheraphy. The therapists and special education teachers should work together. In Turkey, students with special educational needs attend two institutions. One is her/his school, the other is a rehabilitation center which provides additional support. These two institutions should consider the benefits of each student with special needs and provide services in a coordinated way. The ideal condition for promoting inclusion is to bring these supportive services to the students with special educational needs as close as possible."

- *The necessity of changing the attitudes of general education teachers for accepting the students with special educational needs in their classrooms*

"I carried out a comprehensive research and a case study in June, 2009 about the attitudes of teachers during practising inclusive education. As a result of a comprehensive literature review through analysing existing research which use interviewing and surveying methods, I concluded that most of the general education teachers do not accept children with special educational needs in their classes. According to the results of the case study which I carried out with 1500 teachers, 79% of the teachers acknowledge that they are ready to accept students with special educational needs in their classes. They state that they accept these students since teaching students with special educational needs is teachers' legal obligation and ethical responsibility and students' constitutional right. Most of the teachers have not even met students with disabilities during their professional life. The teachers claimed that they do not know how to practice inclusive education in their classrooms. Therefore, in order to ensure general education teachers achive inclusion in their classes effectively, they should also be provided additional supportive services. There should not be a distinction between a special education teacher and a general education teacher in terms of the target groups which they provide service for. During pre-service education, a general education teacher candidate should learn to provide service for students with low academic performances besides students with high academic achievement. All teachers can teach all children whether with or without disabilities. In fact, the regulations determine how inclusive education should be practiced in schools."

- *The importance of non-discriminating and non-stigmatizing attitudes towards children with special educational needs*

"Teachers should be careful in order not to stigmatize the children with special educational needs in their classrooms. If these students participate in activities in the ceremonies, such as performing a drama or reciting poetry, they should not be introduced as *students from special education classroom*."

- *Inclusion as a collaborative teamwork*

"General education teachers are not effective in promoting inclusion alone. Administrators, advisors, special education teachers, other school staff, families, local community, local authorities and the governmental offices should work together in cooperation."

- *The significance of a cooperative teaching method in general education classrooms*

"In special education classrooms, a special education teacher and an assistant teacher give education together. However, in general education classrooms if there are no students with special educational needs, charging two teachers in the same classroom is not affordable. Sometimes a teacher assisting general education teacher can be required, especially when there are students with special educational needs. While the general education teacher tutors the whole-class, the assistant teacher can deal with students one by one and help them when they are in difficulty."

- *The benefits of sharing the same education environment for children's development*

"In this school, peer support occurs spontaneously. Children without special educational needs try to adapt themselves to their peers with special needs. They have the advantage of being in the same environment with children with diverse abilities and needs and welcome diversities easily. Their development occurs in a multi-dimensional way, in terms of both cognitive, moral and social development."

- *Equitable use of supportive education environments*

Resource rooms should be accessible for all students. Not only students with low academic performances or special educational needs, but also children with high performances or children who have difficulty in one of the areas should be provided additional supportive services in resource rooms.

Interviewee 4

- *Provision of training support for teachers*

"Teachers are not prepared to include students with special educational needs. The educational programmes that are used for children with special educational needs are contrary to the practice of general education teachers. In general education classrooms, a subject is given in one hour, it is reinforced in another hour, then it is assumed to be internalized. The learning process of the same subject is long and burdensome for the teachers who teach children with cognitive difficulties. If the teachers do not know the characteristics of these children and do not know how they learn, they do not accept them easily in their general education classrooms".

- *A well-prepared Individualized Education Programme*

"Children with special educational needs are instructed according to an Individualized Education Programme (IEP) which is prepared by IEP unit in the school which is established through the participation of general education teachers, special education teachers, advisors and the vice-principal. The academic performance and capabilities of the children and the decisions of families affect this programme. A student with minor physical limitations can be exempted from physical education course, whereas a student with a wheel-chair can play basketball depending on the student's and her/his family's will."

- *The significance of additional supportive education and therapy services*

"In this school, there is a therapy room. However, there is no therapist who provide rehabilitation services. Additional supportive education and therapy services are necessary in order to promote inclusion in schools."

- *The necessity of assigning more teachers to schools*

"The number of teachers is not enough in order to provide individual supportive education services."

Interviewee 5

- *Integration regarding the benefits of each particular individual*

"Nearly all children will be enabled to be educated as part of a mainstream class in their local mainstream school for at least part of the day, or as long as it can be of benefit to the children."

- *The significance of teachers' role*

"All teachers become teachers of students with special needs. Planning and teaching must be differentiated in a multiple of ways to match the needs of the students. Teachers must be ready to problem solve and think on their feet to enable children with differences to understand and learn."

- *Provision of training support for teachers*

"Teachers must have more training to support multiple modes of teaching and learning."

• *Inclusion as a collaborative teamwork*

"In our school, in addition to classroom teachers and learning support assistants, we have different professionals with different areas of expertise such as occupational therapist, educational psychologist, speech and language therapist, dyslexia team, various medical professionals, Counselling and Mental Health Services, physiotherapist, and Autism Outreach Services. Some of these professionals are employed by the local authority and some for the Health Service. If a child with special educational needs require this expertise, we refer them to the service for the assessment of their needs and for the provision of appropriate recommendations, support or resources to the school or family. This would happen as often or for as long as needed. Some children will need very little of this intervention, others a great deal. Meetings between professionals are held at the school or home usually."

4.3 Teacher's Critical Views and Ideas about the Physical Education Environments for Promoting Inclusion

The aim of **Section C** is to understand the use of physical education environments during teachers' inclusive education practices and the ideal education environments for teachers in order to promote principles of inclusion. Information is obtained regarding the characteristics of students with special educational needs and the number of students receiving education in the classrooms.

4.3.1 The Characteristics and the Number of Students in Classrooms

Interviewee 1 claims that: "There are 13 students in my fourth-grade class. I am teaching this class from the first grade. Three of these are students with special educational needs (have cerebral palsy) and they are wheel-chair users. One student in my class is a socially deprived student, who is living in a slum area. This student had adaptation problems when he first attended to primary school, and therefore had learning difficulties."

Interviewee 2 claims that: "In this school, the students who attend special education classrooms have multiple disabilities (both cognitive and orthopedic disabilities). The students have varying degrees of special educational needs. Depending on a lack of dexterity (lack of fine motor skills), most of them have difficulties in writing both on the board and on

the paper and lack self-care skills. While arranging special education classrooms, students' age and academic performance levels are considered. Students who are at nearly the same level and age group are placed in the same classrooms. There are seven students of 10-12 years-of-age in my classroom. There are two teachers in special education classes, one is special education teacher and the other is an assisting teacher."

Interviewee 3 claims that: "In this school, in general education classrooms there are generally 12 students, three-four of them are with special educational needs. In special education classrooms there are generally six students with special educational needs." She also acknowledges that there are children with different learning types among children without special educational needs. She emphasizes that in inclusive education practice, these diverse learners should also be considered.

Interviewee 4 claims that: "In resource rooms, one-to-one education is the most preferred and most efficient way of teaching. However, depending on the inadequate number of teachers assigned, a teacher can carry out a group study with maximum six students of nearly same academic performance level. If a student has a behavioral disorder, we give individual support to this student in the resource room."

Interviewee 5 claims that: "The number of students in primary education classrooms vary between 25 and 30."

4.3.2 The Teachers' and the Students' Use of Education Environments

Interviewee 1 claims that: "I arrange the desks in a U-shaped form during whole-class tutoring. Three desks are located at the back of the classroom. Two desks are at the side walls. The wheel-chair users are located in front of the classroom in order to enable their access. Two wheel-chairs are located at the side walls and one wheel-chair is in the middle. Our classrooms are not crowded. However, the presence of wheel-chair users and the obligation to promote their accessibility to the services and the education environment necessitates broader spaces than our classrooms actually are. We have a computer and projection device available for the use of students. Students can present a theme to the whole class by using these technological devices. Besides, during free-time activities, by closing the curtains the students can watch films under the supervision of their teachers. During

group study, I arrange the desks in three clusters. Generally four students form a cluster. When the weather is convenient, we use the playground in front of the classroom as a learning environment. In our classroom, there are also cabinets for the storage of students' everyday belongings. General education teachers of the first three grades perform physical education courses. We use the playground for these activities. Sometimes two adjacent classrooms can participate in physical education courses together on the playground. "
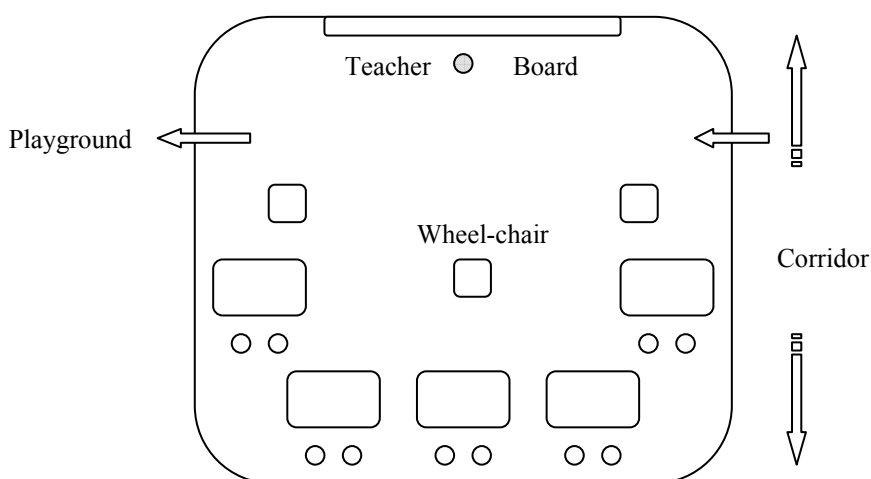
Figure 4.1 Arrangement of a general education classroom where inclusive education is practiced in *Gökkuşağı Primary School*

Interviewee 2 claims that: "I start the lessons, then the assisting teacher continues. I lecture one student at the back of the class facing the rear wall during the lesson. If the student has an attention deficit disorder, this student should be lectured in a separate space. But I cannot leave the whole class, and take this student to a resource room during the course. Therefore, inside a special education classroom, there should be separate space where different practices are carried out. There should be a separate compartment with a desk, two tables and a sink. The teacher can provide an individual support for each student by using educational materials which are stored in the built-in cupboards and can teach each student self-care skills such as washing hands and brushing teeth. The same separate space can be used for resting by the teachers and the students. In special education classrooms, we use computers, toys and puzzles. We use big fonts when writing in order to enable children with visual impairments to see easily. We also use special educational materials for enabling students understand the concepts and the numbers."
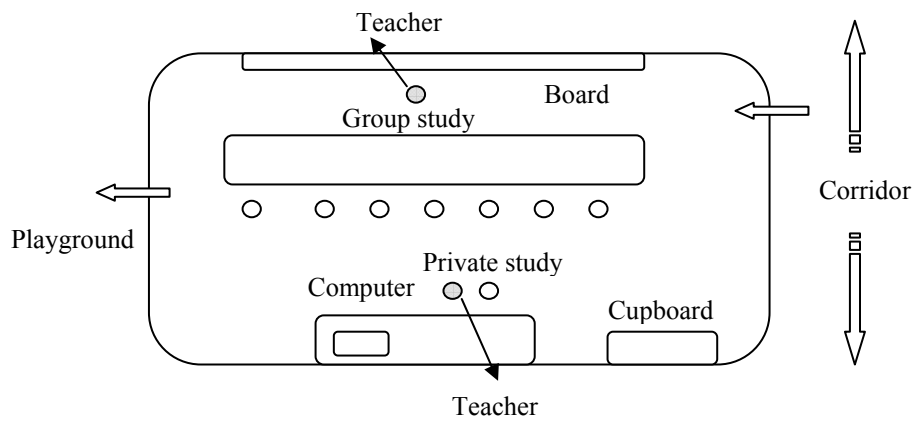
Figure 4.2 Arrangement of a special education classroom in *Gökkuşağı Primary School*
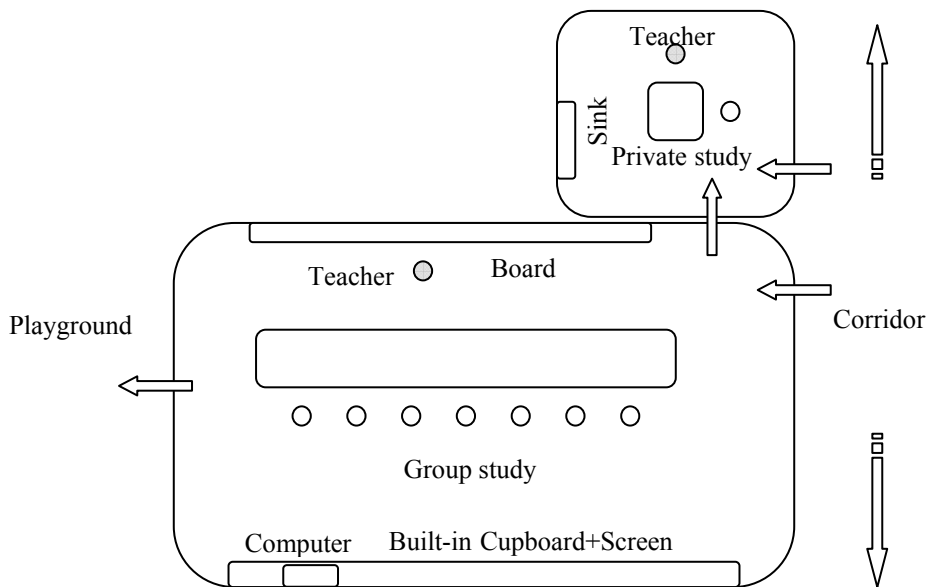
Figure 4.3 Ideal arrangement of a special education classroom

Interviewee 3 and 4 explained the ideal condition for the location and arrangement of classrooms and resource rooms. "There should be a resource room adjacent to the classroom. While the teacher lectures the class, she/he can take a student in the resource room and can provide special assistance there during the course. In this school, there are individual education rooms at some distance from the classrooms. There, special eduation teachers assist students with special educational needs who are attending general education classrooms."
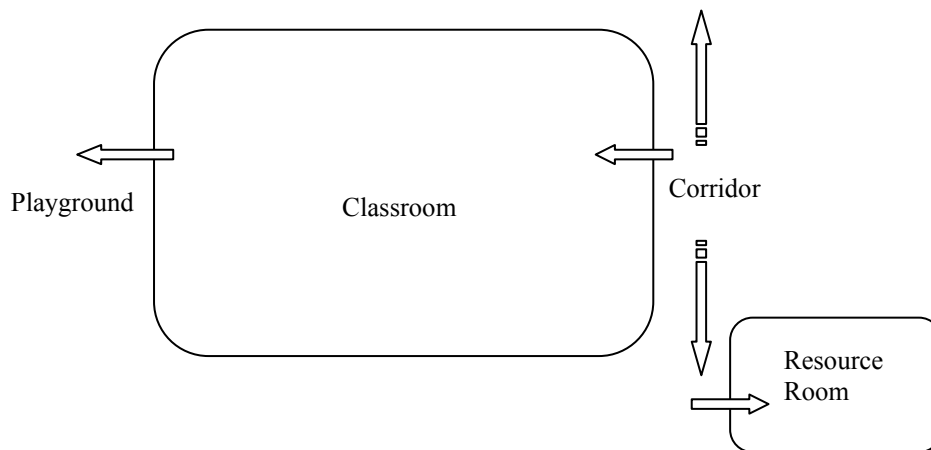
Figure 4.4 Location of classrooms and resource rooms in *Gökkuşağı Primary School*
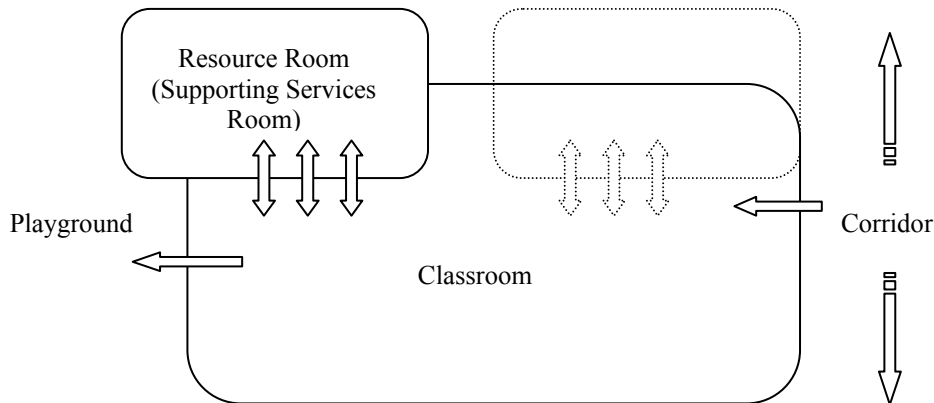
Figure 4.5 Ideal spatial relationship between a classroom and a resource room

4.4 Teachers' Suggestions and Expectations Regarding Education Environments

Section D involves teachers' suggestions and expectations regarding design of education environments for practicising inclusive education. The information derived from this section reveals that teachers are open to participate in dialogue with architects and other professionals during design process. They are willing to share their experiences. The teachers indicated their suggestions and expectations regarding design criteria of learning spaces for promoting inclusion. Their statements can enable architects to consider these criteria during design process.

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Interviewee 1 indicates the problems regarding the use of spaces: "The classroom spaces should be much wider, and the number of students in the classrooms should be kept the same. In this way, the space would be more spacious and we would feel more comfortable. The dimensions of the classrooms are insufficient when the availability of three wheel-chair users are considered. This condition limits movement freely for all students. The dimension of the ceremony area is inadequate. Ceremonies are established on basketball playground. In this school, we emphasize the necessity for establishing ceremonies in order to commemorate special days and weeks. We celebrate these days and weeks with ronds, theatral performances, poems and songs. The students with special educational needs also participate in these performances. Thus, there is a demand for a separate outdoor ceremony area."

Interviewee 2 implies that teachers should participate in decision-making during the design process of schools: "I wish there were an application area to enable students to develop their self-care skills and sinks in special education classrooms. If I were asked during the design process of this school, I would say that there should be a screen which divides the space when needed, multi-purpose built-in cupboards which could be used for both exhibiting students' works and storing educational materials. The level of the boards should be adapted. The desks should be suitable for all wheel-chair users. In my classrooms, except one student, six students are wheel-chair users. The dimensions of wheel-chairs are changing according to each student. Thus, the dimensions of the desks are not suitable for some of the wheel-chairs."

Interviewee 3 indicates that all professions should be aware of the diversity in the society: "In order to eliminate the disabling factors in the environment, the professionals should cooperate. The needs of people with disabilities should be considered while making environmental arrangements. In school designs, both students with special educational needs, students with heavy bags and other users should be considered. There should be a resource room adjacent to each classroom. There should be a sink in each classroom." She claims that providing therapy is necessary in eliminating problem behaviors in students with social, emotional and behavioral disorders: "Hobby areas should be arranged in the schools, for example feeding animals, breeding plants, jewelry or object design, chess tournament and quiz shows are all necessary activities. These hobbies can be viewed as therapy. In addition

to this, physiotherapy and speech therapy are also essential. Spaces should be arranged in order to carry out these activities."

Interviewee 4 specifies that one of the problems in this school is the distance between the resource rooms and the classrooms. "The resource rooms should be arranged adjacent to the classrooms. While one teacher lectures the whole class, assisting teacher should provide a student additional education support. The noise level should be adjusted in each education environment. Heating, insulation, ventilation and illumination are the other important factors to be considered in design. There are also conflicting needs and demands which should be considered during design. For example, in our school some of the families demanded railings at the side walls of the ramps. They claim that their children who have problems in walking can move by holding these rails. The families of children with wheel-chairs objected and claimed that these railing will be obstacles for their children who may hurt themselves without noticing these barriers."

Interviewee 5 emphasizes the necessity of sufficient space for storage of equipment of children with physical needs, a separate dining hall and small space meeting rooms. She specifies that the children enter and leave classrooms for playground through narrow cloakrooms by the toilets and points out the necessity for a separate classroom door. Courses involving noisy activities should take place in enclosed spaces. She noted that "D&T (Design and Technology) areas have open-plan arrangement located on a corridor. D&T is an inevitably noisy activity and should be in an enclosed space." She emphasizes that ventilation and heating are design parameters that should be considered from the outset. "It should be possible to open and close several windows in all rooms. We have had endless problems with none functioning airconditioning and overactive heating." She highlights the necessity of collaboration of education and health professionals during the design process by claiming that "Requirements for hygiene suites had initially not been discussed with health professionals and needed extensive reorganising when we first came to the school."

4.5 Information about the Physical Education Environments in Sample Inclusive Schools

In this part, information about the physical education environment and architectural organization of schools -which are used in the case study- are described. The spatial organization of the Gökkuşağı Primary School, in Turkey and Millennium Primary School, in United Kingdom is evaluated in terms of the *process-based and student-centered understanding of inclusion* conceptualized in this thesis.

4.5.1 An Inclusive School from Turkey: Gökkuşağı Primary School

Figure 4.6 *Gökkuşağı Primary School*, Ankara, Turkey (Gökkuşağı Bulletin, May 2009, n:1)

Gökkuşağı Primary School[9] is a public primary institution in Ankara, Turkey which provides education with an *inclusive* ethos since 2006. The low-rise building has a horizontal U-shaped layout and two stories (Figure 4.6). There is one rectangular block in which the entrance hall, information desk, security room which involves camera and sound system, cafeteria, music hall and ballet hall are located. On the first floor of this block, there are administration offices, science laboratories, IT (information technology) room, sports hall and a waiting room for families. In this room, there are tables, chairs and computers which are available for the use of the families. Next to this space, there is a training room where parents can receive training and attend courses for two days per week.

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[9] *Gökkuşağı Primary School* was designed by A Tasarım Architectural Office in Ankara, Turkey.

There are two rectangular arms attached perpendicularly to this block. Inside the U-form there is a courtyard. In these two arms, on the ground floor, there are spacious corridors and classrooms are arranged on two sides of these corridors. All the classrooms are arranged on the ground floor. Both have two entries, one is on the corridor, one is on the outer facade which ensure all children's use of outer activity space (Figure 4.7, Figure 4.8).
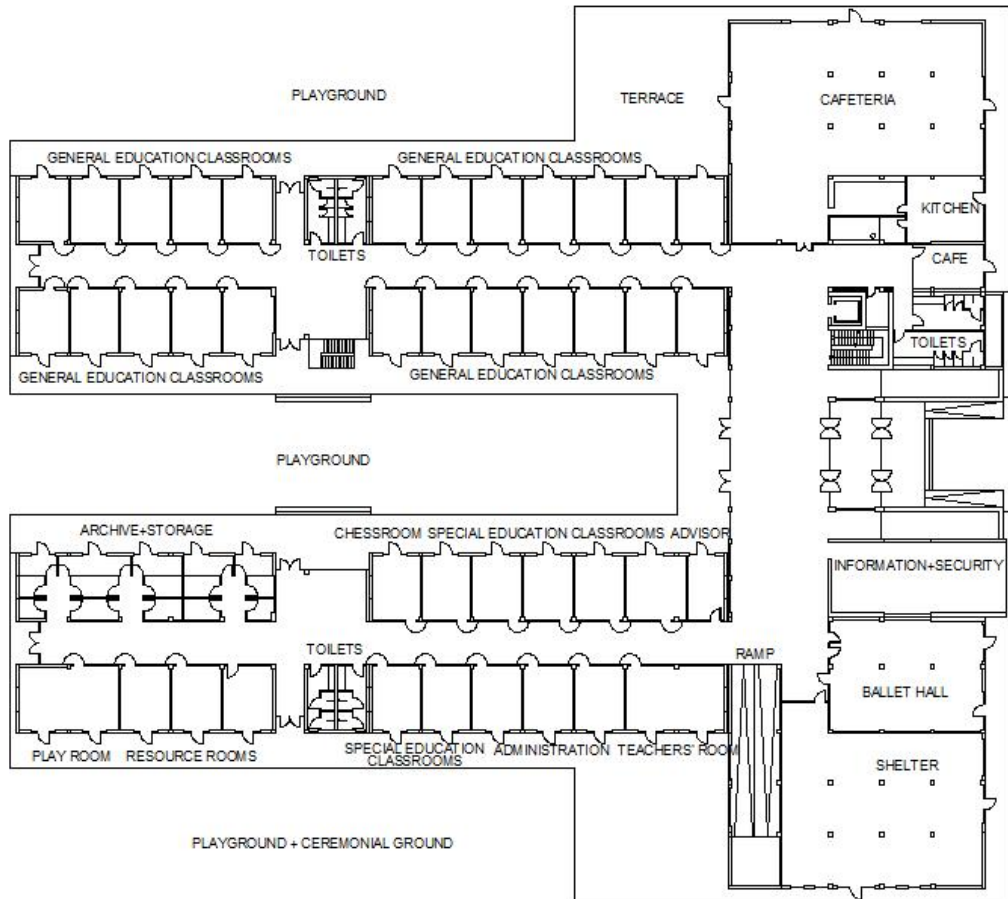
Figure 4.7 *Gökkuşağı Primary School*, ground floor plan (Actual use) (Adapted from original architectural project, A Tasarım Architectural Office, Ankara)

On the ground floor, one of the arms is reserved for special education. In special education classrooms, there are six children with cerebral palsy, they both have multiple disabilities (physical and cognitive disabilities). They have mental retardation at varying levels. They are generally of the same age group. The special education part is also a preparation space for transferring to general education classroom. Children with mild cognitive disabilities who receive education in special education classrooms can continue their education in

general classrooms after a while. The other arm involves general education classrooms which are arranged on both sides of a spacious corridor. In these classrooms inclusive education is practiced. There are twelve students, three-four of them are children with special education needs, they have physical difficulties with or without mild cognitive disabilities. The corridors are attached to extended spaces in the middle in order to enable transition to the courtyard and to the other arm.
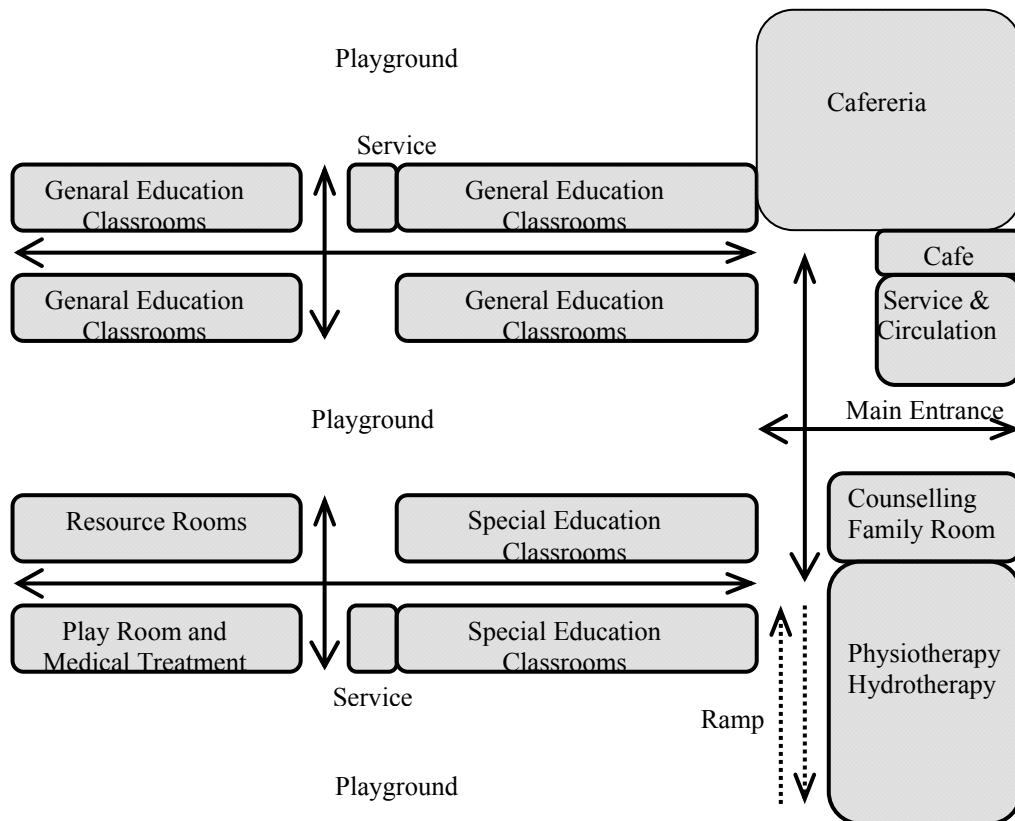
Figure 4.8 *Gökkuşağı Primary School*, ground floor plan
(According to architectural project)

On the first floor, above the special education classrooms there is an Early Childhood Education Center. The first floor above the general education classrooms is used for community use. There is a foyer and a multipurpose hall which is used for school performances. The other schools in the vicinity, which do not have multipurpose halls, can also perform activities. This hall can also be used for meetings and conferences which are organized by official institutions. There is a steel staircase in order to provide separate access

to this multipurpose hall from the outside without entering into the school. However this staircase has not been used until now (Figure 4.9).
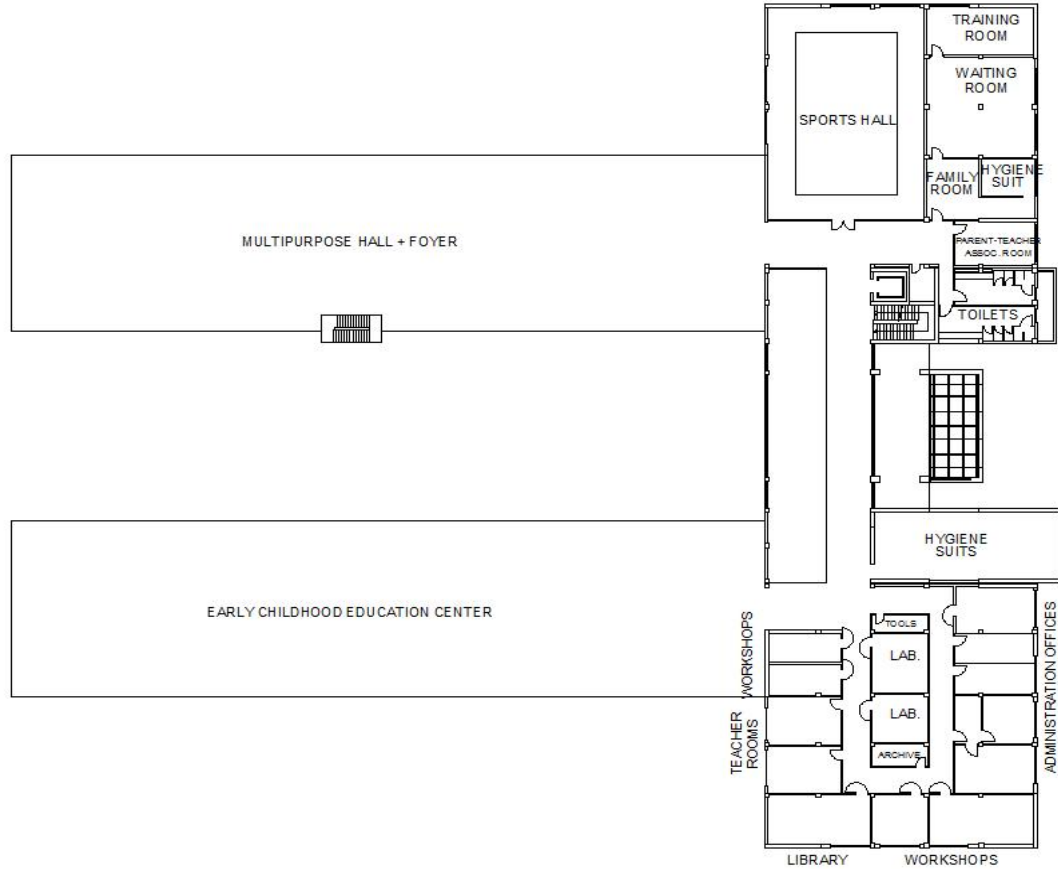
Figure 4.9 *Gökkuşağı Primary School*, first floor plan (Actual use) (Adapted from original architectural project, A Tasarım Architectural Office, Ankara)

Information regarding curriculum-based use

In primary schools, in the first three grades, Turkish, life science and mathematics, from the fourth grade, science and technology, social science, Turkish and mathematics lessons are practiced in the classrooms. Advisors participate in the classrooms with general education teachers during the guidance lessons. Visual arts lesson is also performed in the classroom. Physical education lessons are performed either in the sports hall on the first floor or in the school garden where all classrooms can easily expand. Ballet hall on the ground floor can also be used for physical education lessons. Music and rythm courses are performed in music hall on the ground floor. IT (information technology) is an elective course and is carried out

in IT classroom on the first floor. Chess course is also elective and is performed in chess classroom on the ground floor. This class can also be available to all students at break times. Laboratories on the first floor are used during science and technology courses.

Information regarding the use of supportive spaces

There is a physiotherapy hall on the ground floor in the school. Until this academic year, there was a physiotherapist who provided supporting services for students with special educational needs. This year, a physiotherapist has not been assigned, so the school does not provide theraphy services for these students. There are storage spaces for students' wheel-chairs and walking aids. Students can do walking exercises with their walkers by the help of their family members or care-takers during long break-times. There are resource rooms on the ground floor where a special education teacher tutors a student individually during two courses each week. Sometimes two students with similar academic performances are lectured together by a special education teacher. Families, who are in the waiting room on the first floor, are also invited to the classrooms and resource rooms if necessary. Families can check their children from the corridor through the sight glasses in special education classrooms if they feel anxious about their children's condition. On the first floor, there are hygiene suits which can be used by families and caretakers for helping their children's self care needs.

Information regarding the use of circulation spaces (including main entrance, corridors and exits)

The circulation spaces enable users' ease-of-access to the learning spaces and are used during the day. The corridors are wide enough for wheelchair users. There is a lift and a ramp for the use of students with wheelchairs, walking aids, heavy bags, women with prams, pre-school children and students who have temporary disabilities and for providing services to the spaces on the first floor. The circulation spaces reinforce visual and social interaction between all users. Peer support in the school can be observed easily in the corridors. All students help their peers with special educational needs, especially during break-times.

Information regarding the use of common spaces

There are indoor and outdoor spaces for the use of students for play and activity purposes during break-times. These spaces are organized to address students' diverse needs and interests. On the playground, there are playing materials such as sandpit, swing and slide. There are also volleyball and basketball playgrounds. On the first floor, there is a sports hall, which is used during cold weathers. Each classroom is linked to the outdoor playgrounds. Students with cerebral palsy like to swing under the supervision of their parents and caretakers and like to play on the sandpits. There are safety locks on the swings. If families are invited, they can also access to the classroom from the playground and take their exhausted children for a walk in the garden during the lesson for some time. There is a cafeteria which is available for the use of students, teachers, families and visitors. Families receive training courses during the weekends. Multi-purpose hall on the first floor is available for community use.

Evaluation of the Physical Education Environment in Gökkuşağı Primary School

At the beginning of this study, it has been assumed that Gökkuşağı Primary School is the ideal inclusive education environment. However, when the teachers' responses are investigated, it is understood that there is a gap between the actual and ideal state regarding the implementation of inclusive education practices and the physical environment where these practices take place. The school was set up in order to provide educational and rehabilitation services for children with special needs and to integrate students with and without disabilities in the same environment. Depending on the non-availability of a therapist and school-centered supportive services, the students with special needs do not have the opportunity of accessing multiple options in order to manifest their potential strengths.

The school has an effective spatial organization which provides easy access to all of the spaces in the school and considers accessibility measures denoted in the building codes. The school also involves the spaces denoted in inclusive education legislations such as resource rooms and therapy rooms. However, it does not necessarily match the needs of an inclusive education environment. The classrooms are not conceptualized with a different vision than the traditional classroom spaces. Resource rooms are provided but are located far from

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classrooms. The classroom space should be adjacent to a resource room in order to enable the teacher to deal with one student with special educational needs without leaving the classroom, while another teacher instructs the whole class. There are two wings which separate students in special education classrooms from their peers who receive education in general education classrooms. This organization leads to stigmatization and identification of the students according to their classrooms (general education student vs. special education student).

4.5.2 An Inclusive School from United Kingdom: Millenium Primary School

In United Kingdom, every school has an *equal opportunities policy* whose requirements are underpinned by human rights law. Teachers have the responsibility of implementing its principles. Rather than expecting the same learning outcomes for each individual, the policy aims to remove barriers to educational success and broaden opportunities in the education environment for all in order to ensure students to achieve their potential (TDA website).

The principles of equal opportunities policy in education are to ensure that all children gain access to the whole curriculum, develop self esteem, are encouraged to understand, respect and value all individuals regardless of their abilities/diabilities, ethnic, cultural and religious backgrounds and understand their peers' special needs, and participate in all curriculum activities and games on equal basis regardless of their gender. The school collaborates with parents and a range of professionals to develop strategies and programmes for providing appropriate services for children with special educational needs (Millennium Primary school website).

Millennium Primary School[10], which is located in Greenwich Millennium Village, London, United Kingdom was opened in January 2001. Initially, it was designed to provide an inclusive learning community and to serve as both a school and a community center. A Health Center has been located next to the school where many of the students and the local community members have their family doctors. The school and the health center work cooperatively in order to encourage a healthy living community. In the school, children with Autism Spectrum Disorder receive education with their peers through receiving Designated

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[10] *Millennium Primary School* was designed by Edward Cullinan Architects in London, United Kingdom.

Special Provision (DSP). The purpose of the DSP is to provide specialist support to children who would benefit from integrating into a general education environment (Millennium Primary School website).

The Designated Special Provision (DSP) is provided by experts in a classroom equipped with appropriate resources for six children in a small group. There are a number of professionals who work with an individual child with special needs, these are a teacher-in-charge of the autistic provision and two learning support assistants and other supporting staff such as a speech and language therapist, educational psychologist and the outreach service for children with Autism Spectrum Disorder. There is a Special Educational Needs Coordinator in the school who monitors the progress of the education of children with special needs. Depending on the child's individual needs, an appropriate education programme is planned. Some children may require longer periods in the DSP. Others may quickly increase the amount of time spent in their general education classroom. The aim is the fullest integration possible at a pace that is appropriate for the child (Millennium Primary School website).

The school was conceived to create a new type of facility for the local community, where education, community and healthcare services are integrated on a single site. All facilities are available for community use after school hours and on weekends. A primary school, with an early learning centre, promote inclusion for children with special educational needs and also serves as an adult education and training centre. The health centre provides a range of primary care and family support services for the school and the community. The playground can be used for recreational activities, exhibitions and meetings of the community (OECD, 2006: 26).

The site comprises three interconnected buildings which are school, sports hall and health centre (Figure 4.10, Figure 4.11). There is a two-storey classroom block which involve two-storey drums housing light wells, toilets, staircases, small group rooms and lobbies (Figure 4.12). On each floor, there are eight classrooms on one side of a long corridor. There are administrative offices on the other side of the corridor. On the ground floor, four classrooms are used for early childhood education and four classrooms provide primary education (Figure 4.13, Figure 4.14, Figure 4.15).
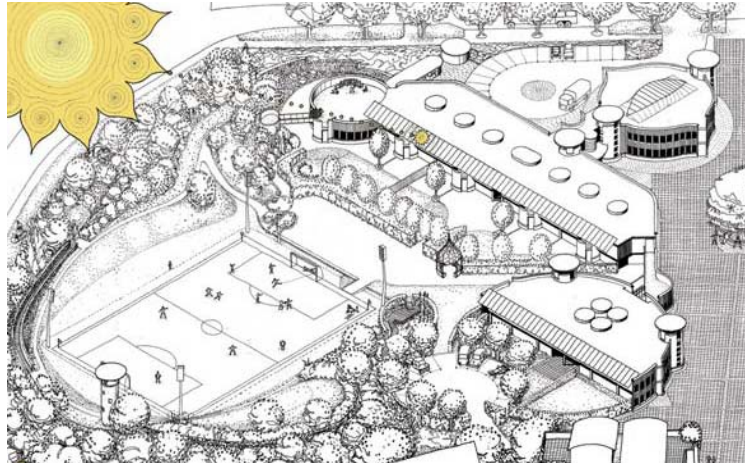
Figure 4.10 *Millennium Primary School*, London, United Kingdom
(In OECD, *21st Century Learning Environments,* OECD Publishing, 2006, p. 94)

Figure 4.11 Millennium Primary School, exterior view
(In http://www.millenniumprimaryschool.moonfruit.com)

Figure 4.12 *Millennium Primary School*, drum unit
(In OECD, *21st Century Learning Environments,* OECD Publishing, 2006, p. 95)

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Although integrated into the design and operation of the school, the early years centre and health centre can function independently after school hours and on weekends. Each class within the early years centre has its own external hard and soft play areas. The health centre provides a full range of primary care facilities. Family support is provided by the multi-agency office, and there is a wide range of adult education and training available. The school is designed to fully integrate children with special needs through equitable access to all parts of the building, a personal care suite, large and small group rooms, assessment room, and toilets and parking for people with disabilities. The outdoor areas, playgrounds, sports hall and health centre are designed for both school and community use. Design solutions are provided to optimise light, heating and ventilation and to maximize students' comfort. The school is equipped with new information technologies. In classrooms, there are electronic whiteboards, cabling and video conferencing software to link up with local schools (OECD, 2006: 94).

Figure 4.13 Spatial organization in *Millennium Primary School*

Figure 4.14 *Millennium Primary School,* ground floor plan (In OECD, *21st Century Learning Environments,* OECD Publishing, 2006, p. 94)
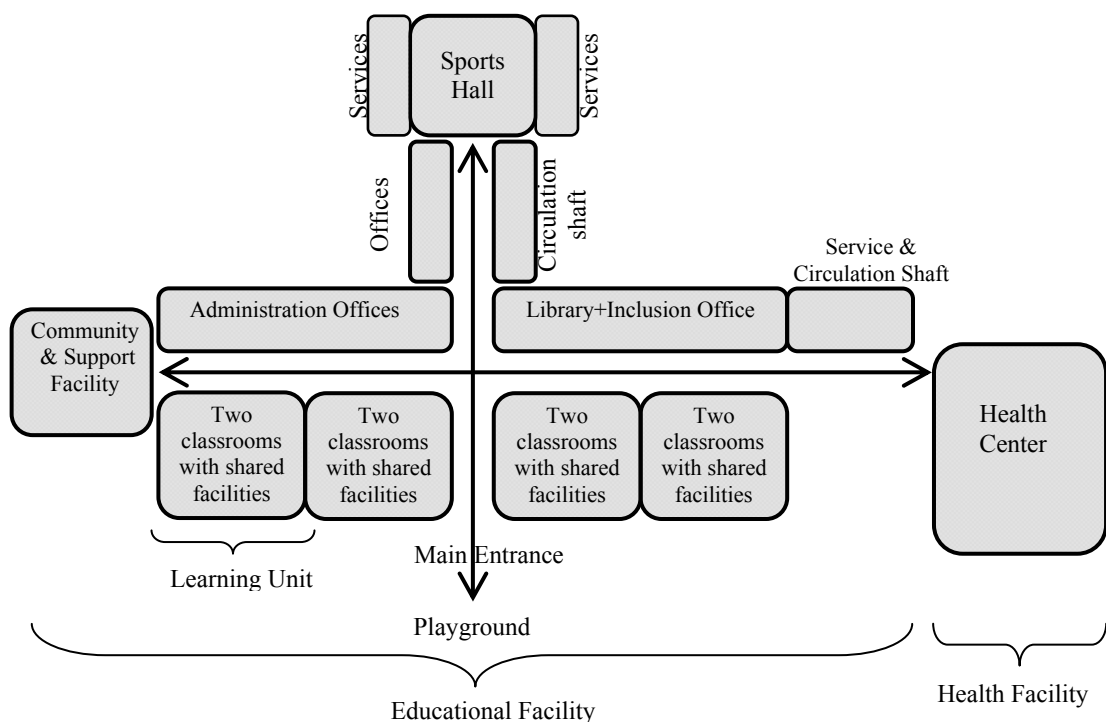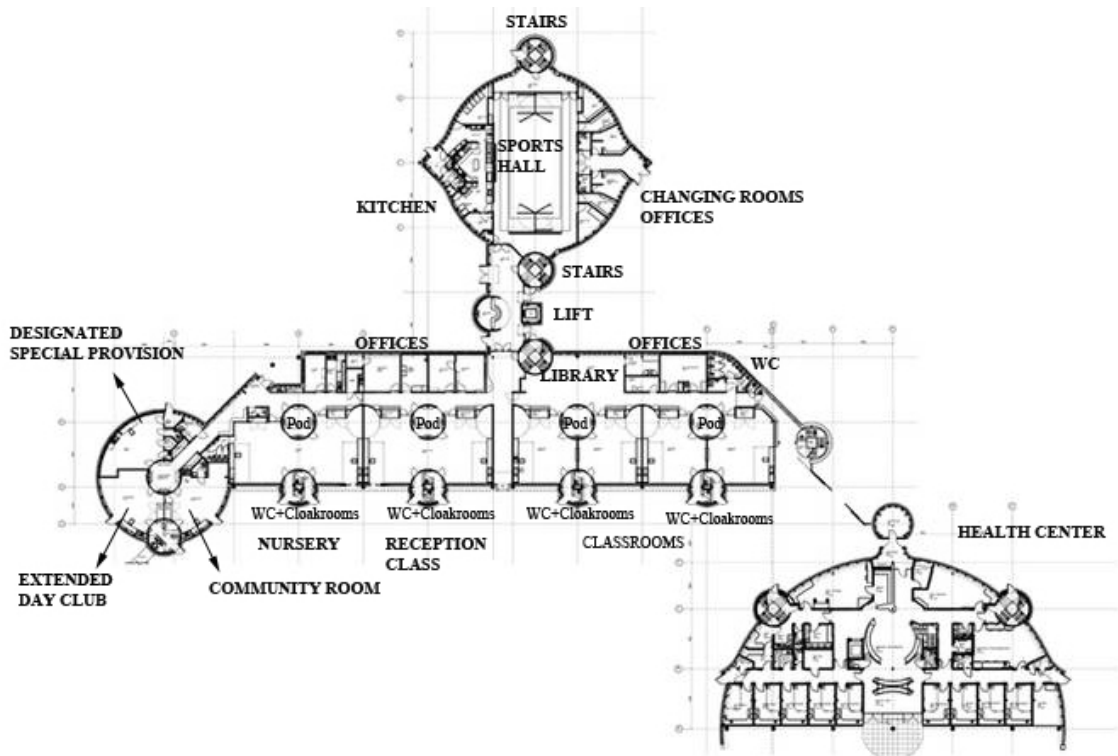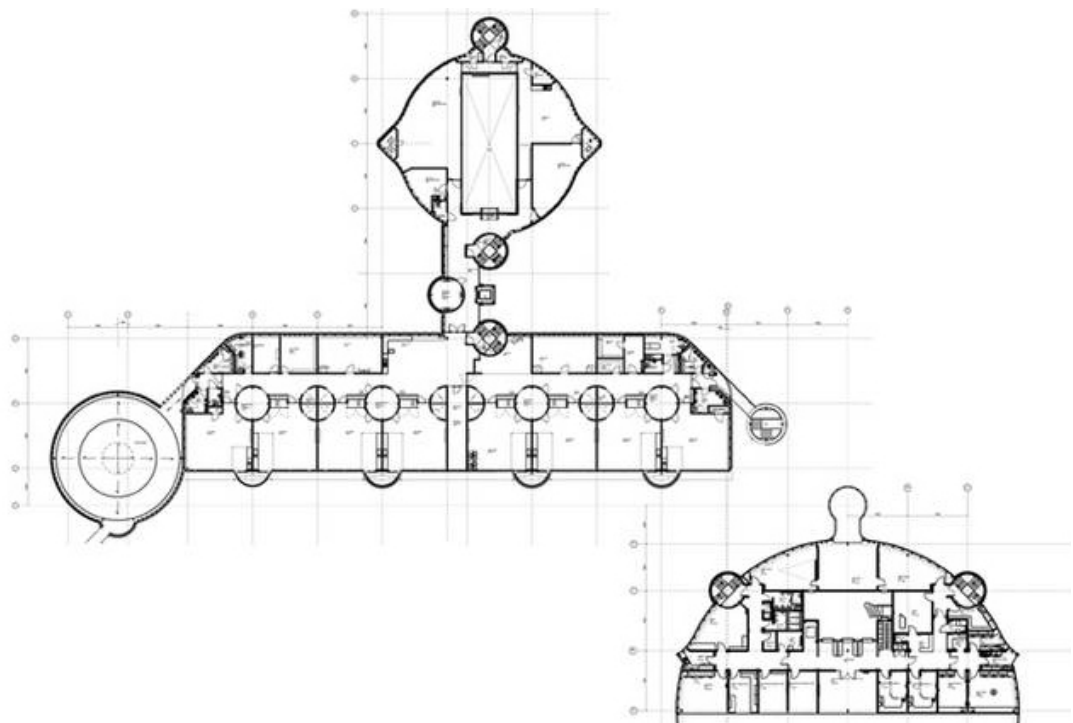

Figure 4.15 *Millennium Primary School,* first floor plan (In Imagine, Inspirational School Design website)
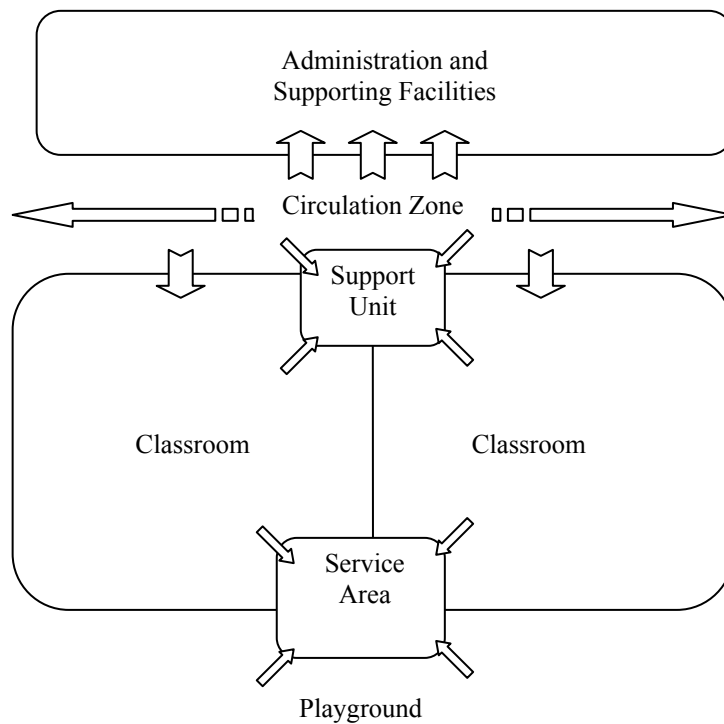
Figure 4.16 *Millennium Primary School,* spatial organization of a learning unit

Evaluation of the Physical Environment in Millennium Primary School

In Millennium Primary School, two adjacent classrooms, which share common spaces such as a small teaching space (supportive unit), services and a cloakroom, form a learning unit. Each learning unit is linked to the administration and supporting facilities such as a library and an inclusion office through the circulation zone. Each classroom has a direct access to the playground. This spatial organization provides opportunity for combining two adjacent classrooms when needed and thus promotes flexibility and future adaptability. Students are provided direct access to the spaces they use during the day. This condition enable all students, including students with disabilites to participate in curricular and extra-curricular activities during the day. The spatial organization of the classrooms provides options to enable students to achieve their full potential through the use of supportive units during the learning process. All spaces are centered around the basic learning unit according to students' needs and interests (Figure 4.16).

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In this school, the significance of learning process during integrating students with special educational needs into general education system has been emphasized through a comprehensive institutional restructuring. Necessary educational and rehabilitative adaptations have been realized according to diverse needs. Architectural organization of the school encourages the promotion of inclusive education. This is an attiude which supports the *process-based and student-centered understanding of inclusion,* which is the main emphasis of this thesis.

4.6 Discussion

In this chapter, the interview questions are composed of four parts. Depending on the information from Section A, participants and their educational experiences are identified (Part 4.1). There are general education teachers, special education teachers and a special education coordinator among the participants who are eligible to instruct and provide supportive services to children with special educational needs and to practice inclusive education.

Depending on the answers from Section B, teachers' ideas about inclusive education and its general principles are revealed (Part 4.2). Teachers' ideas are classified under headings (inclusive education principles) given in italics supported by teachers' vignettes (information about teachers' practices in classrooms) given in quotation marks below each heading. Although there are common themes the teachers refer, such as the necessity of an education programme adapted to each individual's special needs, the significance of cooperation and participation, etc., their responses are varied, rich and complementary in revealing central ideas of *process-based and student-centered principles of inclusion* in education environments. Teachers denote the most prominent differences that distinguish inclusive education from special and traditional education system as below:

1. Increased responsibility of the teacher, teachers' role in making educational adaptations for students with special educational needs (SEN)
2. Teachers' openness to cooperation (collaborative teamwork)
3. Cooperative teaching method in general education classrooms
4. Individualized Education Programme (IEP) for children with SEN (pre-determined educational programme)

5. Families' openness to cooperation and participation

6. Childrens' social and moral development (Children are socialized naturally, they acquire social skills, social and ethical values)

7. Long-term objective of raising awareness on people with disabilities among the new generation

8. Special education classrooms in general education schools as a preparation phase prior to inclusion

9. Deciding who will benefit from the general education and deciding LRE (Least Restrictive Environment)

10. The significance of physical education environments in promoting inclusion

11. Differences in target groups

12. Coordination between the school and institutions which provide additional supportive services

13. Necessity of changing attitudes of general education teachers for accepting children with SEN in their classrooms

14. Non-discriminating and non-stigmatizing attitudes towards children with SEN

15. The benefits of sharing the same environment for children's development

16. Equitable use of supportive education environments

17. Provision of training support for teachers

18. Additional supportive education and therapy services for students with SEN

19. The urgency of assigning more teachers to schools

Depending on the responses given in Section C, teacher's critical views and ideas about the physical education environments for promoting inclusion are obtained (Part 4.3). It is understood that *usability* is an important criterion for assessing the physical education environments. Teachers' answers in this section provide information about the participants who use the education environments (user type), for what type of activity (type of use) and how long the education environments are being used (the period/frequency of use). The answers reveal teachers' and students' use of education environments (arrangement of a general education classroom and a special education classroom) and teachers' views about ideal arrangement of classrooms (the necessity for a smaller teaching space or a resource room for supporting students adjacent to main teaching space which is used for group study, instruction, etc.).

Section D outlines teachers' suggestions and expectations regarding the design of inclusive education environments. The answers to the last section reveal the significance of involving teachers' ideas into design process. It is apparent that if they were allowed or invited to participate in the design process, their ideas would contribute to the outcomes. Although participatory design approach is out of the scope of this thesis, this study shows the benefits of integrating teachers' ideas during the design process.

Architectural design projects of Gökkuşağı Primary School were obtained from A Tasarım Architectural Office in Ankara before visiting the school. Millennium Primary School's architectural drawings were obtained from the school's website. These drawings were analyzed. Through the data obtained from the information about the physical education environments in these sample inclusive schools, spatial requirements and design aspects of inclusive education environments have been determined. Depending on this information the types of use in education environments are divided into four parts (Part 4.5):

1. education spaces where curriculum-based activities take place
2. supportive spaces where children are provided additional academic support, rehabilitation services and spaces separated for the use of families
3. circulation spaces which ensure users' access to other spaces and where visual and social interaction takes place
4. common spaces which allow use out of school hours and maximize the usability of primary education environments

These design features are elaborated in Chapter 5 with a *process-based* and *student-centered* approach to *inclusion*. This study assumes that architects will interpret this knowledge during pre-design research of inclusive education environments and will differentiate it into a form which will inspire their creative imaginations. The data, that is obtained from this study, is assumed to guide the architects who are going to design new schools and/or to make transformations in existing schools at the preliminary design stage and to provide information for researchers who study on inclusion in education environments in architecture.

CHAPTER 5

RECONSIDERATION OF UNIVERSAL DESIGN PRINCIPLES
FOR PROMOTING INCLUSION IN EDUCATION ENVIRONMENTS

The *process-based and student-centered understanding of inclusion*, which is introduced in this thesis, emphasizes the significance of differentiation of means for accessing the essential amount of knowledge, the relevant content in line with the unique, particular and special needs of individuals during the learning process, rather than accessing the same target knowledge determined in curriculum content at the beginning of each academic year through undetermined and undiversified means. This understanding reveals that the issue of *equal opportunities in education* is not equivalent to *same treatment for all* (same means/ways for accessing same amount of knowledge and the same concent). The process-based and student-centered understanding of inclusion claims that individuals should be treated differently (in line with their particular needs) so that they would have equal chance to achieve their full potential during the learning process.

The schools and its spatial elements (classrooms, workshops, offices, indoor/outdoor playing areas, atriums, etc.) are the physical milieux for the promotion of effective inclusion and they work as a supportive catalyst for education through their intentionally created forms and schemas. Depending on the understanding developed in the previous chapters through elaborating on the conceptual status of the notion of inclusion, the practical concern of inclusive education and the overview of Universal Design principles, this chapter proposes a redefinition of an inclusive education environment in architectural terms by broadening the range of **user type**, enriching **type of use** and extending **period/frequency of use** in education environments.

According to this definition, an inclusive education environment is an integrated learning/teaching environment which accomodates diverse users and a variety of different types of use and which is usable for the maximum amount of time. Therefore, usability

becomes an important issue before revealing the architectural design parameters and spatial requirements of inclusive education environments. The differentiation of the tripartite relationship between user type, type of use and frequency/period of use is also important in revealing the significance of *process-based and student-centered understanding of inclusion*.

As described in Chapter 2, Universal Design principles fall into three broad categories such as principles dealing with value judgments (transcending aspect of design), principles dealing with processes (process-based aspects of design) and principles dealing with human functions (student-centered aspects of design). These categories reinforce the premise of this thesis that *inclusion is a process-based and student-centered notion*.

This chapter elaborates on the principle of equitable use (transcending aspect of design) for describing the parameters of usability and for outlining the spatial requirements of inclusive education environments. The principles dealing with processes and human functions are studied together in order to clarify the design aspects for promoting *process-based and student-centered understanding of inclusion*.

5.1 Equitable Use Principle and Parameters of Usability

Usability offers a comprehensive understanding for inclusive education environments by clarifying the definition of user types by responding to the question *by whom*, the definition of the type of use by responding to *for what*, and the definition of the period/frequency of use by responding to *when and how long the education environment is going to be used*.

5.1.1 Defining User Type

It is important to identify the users and to have the knowledge of user characteristics for architects. Depending on the definition of inclusive education environments, four types of users can be identified. First group is students who have a broad range of diverse capabilities, needs, interests, prior experiences and learning preferences. Architects should focus on students' particular needs and through effective design approaches, should facilitate the means for enabling students to achieve their potential during learning process. Second group is teachers, therapists and other professionals who are equipped to provide students' educational and rehabilitation services. They work in collaboration with each other. Third group is parents/caretakers or other family members who spend most of their time during the

day in the school for helping their children's special needs. The parents of children without special needs also participate in curricular and extracurricular activities in order to monitor their children's progress or to participate in social and cultural activities. The fourth group is the local community, including local people or the members of the schools in the vicinity, who generally use the school out of school hours. The user types are classified as:

- **User type 1:** Students with diverse abilities/learning styles and with/without special educational needs who are integrated into general education environments

  1. User definition depending on variations among learner types (visual/verbal, tactile/kinesthetic, visual/nonverbal and auditory/verbal) (Gargiulo and Metcalf, 2010:191, Winebrenner, 1996:53)

  2. User definition depending on variations in special educational needs (SEN)

  a. Students with high incidence disabilities and gifts and talents (diversity depends on mental retardation, learning disabilities, speech and language disorders, emotional and behavioral disorders, Attention Deficit Hyperactivity Disorder and gifts and talents)

  b. Students with low incidence disabilities and other special needs (diversity depends on hearing impairments, visual impairments, autism spectrum disorders, physical disabilities, health disabilities, or traumatic brain injury, cultural and linguistic background and socio-economic conditions which increase risk for failure in school (poverty, homelessness, child neglect) (Gargiulo and Metcalf, 2010:51-52, 88-89)

- **User type 2:** General education teachers, special education teachers, advisors, learning assistants, therapists and other professionals
- **User type 3:** Parents/caretakers, other family members
- **User type 4:** Local community

5.1.2 Defining Type of Use

In this chapter, four types of use have been defined depending on the principles of inclusive education and the participants of the inclusive education environments. First type of use is curriculum-based use which is not a unidimensional one. Educational facilities in inclusive education environments provide multiple choices for students to achieve knowledge during learning process, so this type of use offers students multidimensional means. During curricular activities, each student's learning process is assessed at that moment. If some students require extra support, they are instructed in another space by a teacher, while the

other teacher is participating in the general education classroom. In order to enable the coordination of the two teachers, the main classroom space and the supporting space should be close to each other. Sometimes parents are invited into the classrooms in order to monitor their children's progress. Teachers show parents means for providing additional support at home. Second type of use is rehabilitation facilities which are complementary to the curricular activities. There are a wide variety of therapy services for a wide variety of special needs. These services aim to enhance students' capabilities during the learning process. Third type of use is collaborative use. The collaboration takes place between various types of users in inclusive education system in order to provide the best means for students in line with their particular needs. During cooperative teaching two teachers (a general and a special education teacher or a learning assistant) share the same classroom during curricular activities. This practise is significant in identifying spatial organization of classrooms. There is coordination between teachers, advisors and therapists. There is also collaboration between teachers and parents. Fourth type of use is community facilities which extend the usability of inclusive education environments. The types of use are classified as:

- **Type of use 1:** curriculum-based use (educational activities)
- **Type of use 2:** rehabilitation facilities (medical facilities)
- **Type of use 3:** collaborative use (cooperative teaching, cooperation between general education teacher and parents/caretakers, advisors, special education teachers and learning assistants)
- **Type of use 4:** additional community facilities (community-based facilities, performing vocational training, music, sports and arts activities, conferences)

5.1.3 Defining Period/Frequency of Use

It is important to clarify which type of user is going to use the school for what type of activity during and out of school hours. Especially students, teachers and other professionals, and parents use the school during educational, rehabilitation and collaborative facilities during the school hours. In addition to actual users, local community members can use the school out of school hours during community-based facilities. Two types of period/frequency of use are defined as:

- **Period 1:** during school hours especially for user type 1, 2 and 3 and during activities identified in type of use 1, 2 and 3.

- **Period 2:** out of school hours for user type 1, 2 and 3, and 4 during activities identified in type of use 4.

Table 5.1 Equitable Use matrix

Period of Use	User Definition	Type of Use	Spatial Requirements											
			1	2	3	4	5	6	7	8	9	10	11	12
Period 1 (During School Hours)	**User type 1** Students	curriculum-based	▨	▨	▨									
		rehabilitation				▨	▨	▨	▨					
		collaborative								▨	▨	▨	▨	
		community-based												
	User type 2 Teachers Therapists	curriculum-based	▨	▨	▨									
		rehabilitation				▨	▨	▨	▨					
		collaborative								▨	▨	▨	▨	
		community-based												
	User type 3 Parents/ Caretakers	curriculum-based	▨	▨	▨									
		rehabilitation				▨	▨	▨	▨					
		collaborative								▨	▨	▨	▨	
		community-based												
	User type 4 Local Community	curriculum-based												
		rehabilitation												
		collaborative												
		community-based												
Period 2 (Out of School Hours)	**User type 1** Students	curriculum-based												
		rehabilitation												
		collaborative												
		community-based											▨	▨
	User type 2 Teachers Therapists	curriculum-based												
		rehabilitation												
		collaborative												
		community-based											▨	▨
	User type 3 Parents/ Caretakers	curriculum-based												
		rehabilitation												
		collaborative												
		community-based											▨	▨
	User type 4 Local Community	curriculum-based												
		rehabilitation												
		collaborative												
		community-based											▨	▨

In this thesis, *equitable use matrix* has been prepared for revealing that there is a variety of correlations between the parameters of usability which are differentiated according to education environment context. Equitable use, the overarching principle of Universal Design, should be considered during architectural design through providing the necessary spaces in education environments by considering all of its users. Users should access the related spaces during particular activities at a particular time without limiting the means for enhancing their capabilities. Supportive spaces should equally be accessible to all students, not only to students with special needs. Multipurpose halls should be accessible to the local community, not only to school members. Considering the broad range of users during architectural design who were not included before, will allow the maximum use of primary education environments.

5.2 Spatial requirements for inclusive education environments

Table 5.3 Spatial Requirements in Inclusive Education Environments

user type	1. students 2. teachers, advisors, therapists, other staff 3. parents, caretakers 4. local community	**Spatial Requirements:** 1. formal learning spaces 2. informal learning spaces 3. non-specialist spaces 4. spaces for medical treatment 5. spaces for guidance and counselling 6. spaces for therapy 7. storage spaces for medical equipments 8. teachers', advisors' and therapist's room 9. family room for waiting, meeting and training activities 10. ICT-enabled meeting room for face to face and teleconference interviews 11. waiting hall, lobby, cafeteria and spaces for personal care 12. easily controllable, specialized or multipurpose spaces used after school hours with separate entrance
type of use	1. curriculum-based use (educational activities) 2. rehabilitation facilities (medical facilities) 3. collaborative use (cooperative teaching, cooperation between general education teacher and parents/ caretakers, advisors, special education teachers and learning assistants) 4. additional community facilities (community-based facilities, performing vocational training, music, sports and arts activities, conferences)	
period of use	1. during school hours 2. out of school hours	

By using *equitable use matrix,* spatial requirements for the design of primary education environments are determined. During school hours, mainly curriculum-based activities take place in formal and informal learning spaces where students with diverse learning styles and special educational needs participate in learning activities and teachers support their students' learning. Rehabilitation and collaborative facilities also take place during school hours which are complementary to educational facilities. Schools provide opportunities of access to local community members and integrate them with school members and other people out of school hours at the end of the day and on weekends. Table 5.3 illustrates the required spaces which should be integrated into school design.

In the following part, spatial requirements for inclusive education environments are described. The figures included in this part do not represent ideal solutions for inclusive environments. They are selected among primary schools worldwide which correspond to only certain aspects of this thesis' approach to inclusion. This thesis does not intend to provide an ideal architectural solution for primary school design. The architectural principles are kept in abstract level and open for interpretations of architects' creative imaginations.

A. Period 1: during school hours/**Type of use 1:** curriculum-based
User type 1: students with diverse learning styles and special educational needs
User type 2: teachers
User type 3: parents/caretakers, other family members

Spatial requirements:
(1) formal learning spaces
    (a) classrooms (individual/private study areas, group study areas, specialized/interest areas and storage areas)
    (b) resource rooms

Formal learning spaces are classrooms where courses which support verbal-linguistic and logical-mathematical domain of students take place. Classroom layout should provide a variety of different spatial combinations with appropriate dimensions for individual/private study, group study, specialized activity and storage. Resource rooms are spaces where additional curricular activities take place. These rooms should be as close to the classrooms as possible (Figure 5.1).
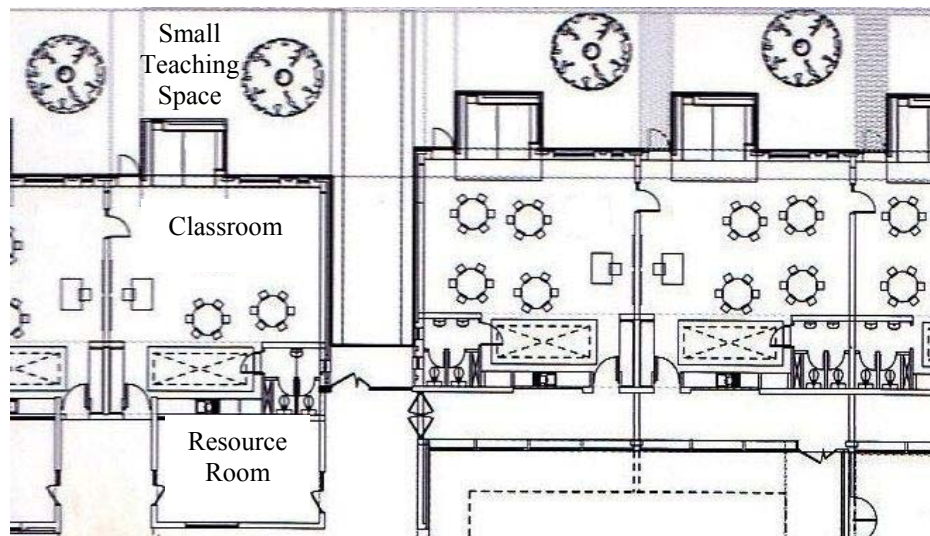
Figure 5.1 Classrooms linked to small teaching spaces, Northkildare Educate Together School, Celbridge, County Kildare, Ireland (In M. Dudek, *A Design Manual: Schools and Kindergartens,* Berlin: Birkhauser Verlag AG, 2008, p.127)

Hrekow, et. al. (2001:68) acknowledges the need for a variety of different-sized teaching spaces; the necessity of linking "large teaching spaces to smaller teaching spaces where assessment, support teaching, different kinds of therapy and small group study can take place, and specialist equipment can be stored", and the demand for additional space for storing specialized needs equipments and curriculum-based learning materials (Figure 5.2).

Figure 5.2 Classroom linked to a small teaching space, Pistorius School[11], Herbrechtingen, Germany (DesignShare, http://www.designshare.com/index.php/projects/pistorius-schule)

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[11] Pistorious School was rewarded with DesignShare Merit Award, in 2006.

Two adjacent classrooms can share common spaces such as service areas, cloakrooms. Through the shared spaces the classrooms on the ground floor can provide access to the playground. Light moveable partition walls between two classroom spaces can enable flexibility and future adaptability, and provide opportunity to combine two spaces in order to facilitate big group activities (Figure 5.3).
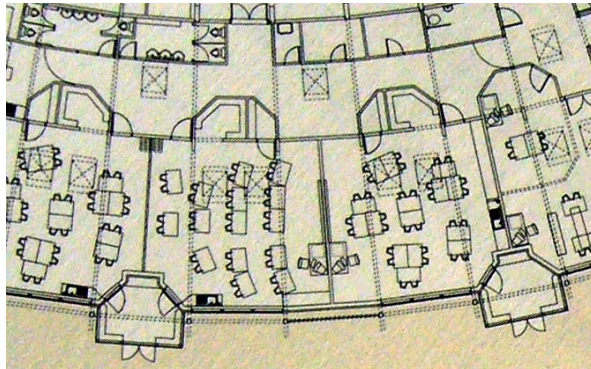
Figure 5.3 Classrooms sharing common spaces, Kingsmead Primary School, Northwich, Cheshire, UK (In M. Dudek, *A Design Manual: Schools and Kindergartens,* Berlin: Birkhauser Verlag AG, 2008, p.143)

Between the classroom space and the circulation space, an inner zone can be located. In this zone, supportive spaces such as small teaching area or resource rooms, counselling room, meeting room where collaboration can take place between teachers, therapists and families, a waiting and a resting room can be provided. Students and teachers can access to these spaces easily without leaving the classroom (Figure 5.4).
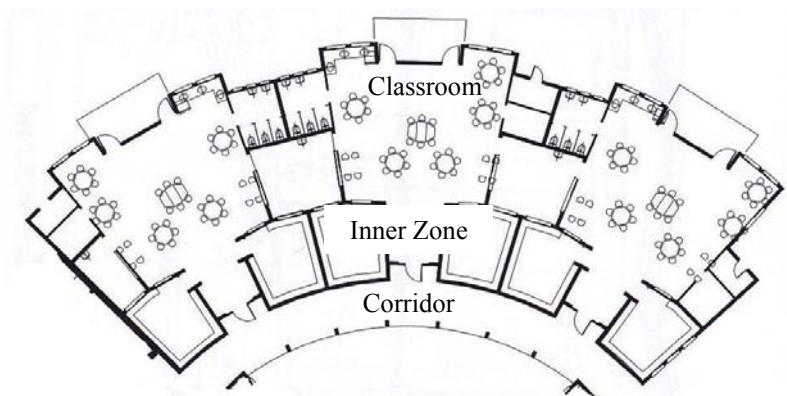
Figure 5.4 Inner zone between classroom and circulation spaces, Hachoresh School, Zichron Yaacov, Israel (In M. Dudek, *A Design Manual: Schools and Kindergartens,* Berlin: Birkhauser Verlag AG, 2008, p.131)

Inner zones between the classrooms and corridors can enable future extension of the classroom space. Moveable walls or light partitions between the classroom and the inner zone can provide opportunity for the classrooms to expand. Different-sized study areas can be obtained for different group of students. Inner zones can provide individual and small group study areas and break-out areas. A wet area with a workbench and a sink inside the classrooms can enhance students' self care skills. Acoustic moveable partitions between two adjacent spaces can control noise and provide opportunity to combine the two classrooms (Figure 5.5).
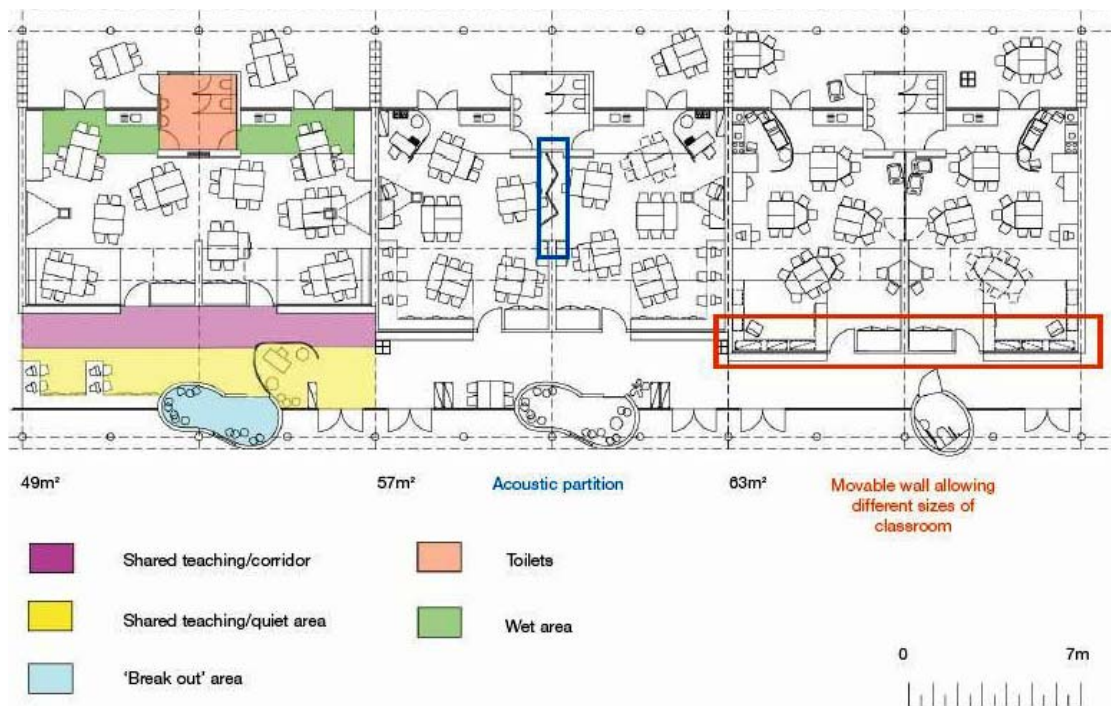
Figure 5.5 Inner zones in front of the classrooms (In K. Fisher, Linking Pedagogy and Space, 2005)

(2) informal learning spaces

    (a) break-out spaces between classrooms

    (b) multipurpose spaces used for sports facilities, performing arts, conferences etc.

    (c) ateliers for visual arts, music, drama, dance and chess courses

    (d) laboratories for science course

    (e) information technology classroom

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(f) library, media center

(g) indoor/outdoor spaces for leisure/play activities

(h) outdoor spaces where classrooms and learning facilities can extend

(i) large halls around atriums

Classrooms can be clustered around a central space where curricular, extracurricular activities and informal interactions can take place. These informal learning areas are defined as break-out spaces (Figure 5.6, Figure 5.7).

Figure 5.6 Break-out space 1, West Haven Elementary School[12], Utah, USA (DesignShare, http://www.designshare.com/index.php/projects/west-haven-elementary/images)

Figure 5.7 Break-out space 2, West Haven Elementary School, Utah, USA (DesignShare, http://www.designshare.com/index.php/projects/west-haven-elementary/images)

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[12] West Haven Elementary School was rewarded with DesignShare Citation Award, in 2005.

Dudek (2008:23) claims that integration of technology in primary schools provides opportunities for allowing each child to learn in different ways, at different paces consistent with their own capacity and performance level. Break-outspaces can be used in order to provide computer-based learning tools for small group instruction, to encourage collaborative work and to support project-based learning. These are secondary instructional areas which allow a teacher to supervise more than one area at a time. These spaces allow for group interactions, collaborative work and different extracurricular activities (Figure 5.8, Figure 5.9).
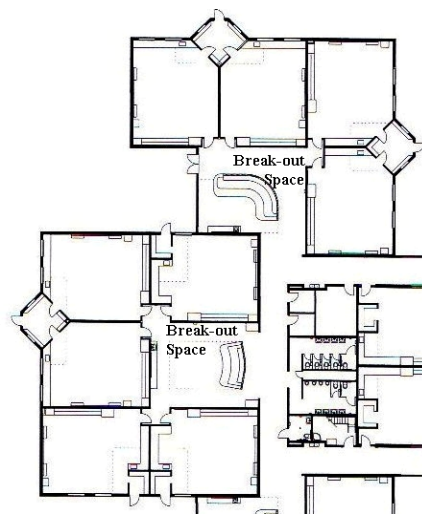
Figure 5.8 Break-out space between classroom clusters, West Haven Elementary School, Utah, USA (In M. Dudek, *A Design Manual: Schools and Kindergartens,* Berlin: Birkhauser Verlag AG, 2008, p.23)
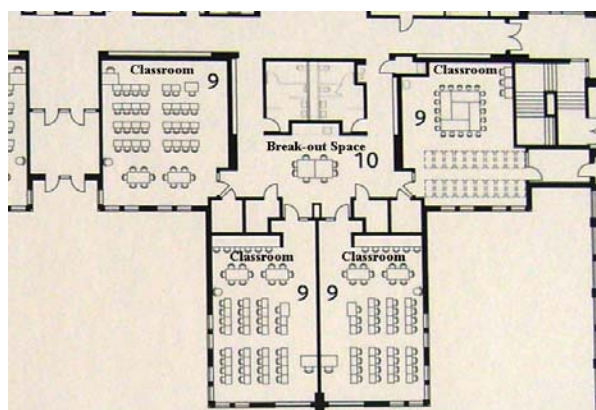
Figure 5.9 Break-out space between classroom clusters, Helen S. Faison Academy, Pittsburgh, Pennsylvania, USA (In M. Dudek, *A Design Manual: Schools and Kindergartens,* Berlin: Birkhauser Verlag AG, 2008, p.161)

Informal learning spaces are specialized environments where courses that address visual-spatial, body-kinesthetic, musical-rhythmic, interpersonal, intrapersonal intelligences of students take place. These are multipurpose spaces used for sports facilities and performing arts (Figure 5.10) and ateliers for visual arts, music, drama and dance.

Figure 5.10 Multipurpose hall, West Haven Elementary School, Utah, USA
(http://www.designshare.com/index.php/projects/west-haven-elementary/images)

In addition to these, there are spaces where applied courses take place such as science laboratories and information technology classrooms. Libraries and media centers are spaces where extracurricular and supportive learning activities take place (Figure 5.11). Learning can also occur during extracurricular activities and interactions in indoor and outdoor spaces. These activities can enhance students' social skills. Large halls around atriums can provide opportunity for visual and social interactions.

Figure 5.11 Media center, West Haven Elementary School, Utah, USA
(http://www.designshare.com/index.php/projects/west-haven-elementary/images)

(3) non-specialist spaces

    (a) spaces for transition (corridors, hallways)

    (b) spaces for personal care/service areas (cloakrooms, toilets, hygiene suits)

    (c) spaces for resting (both for students and teachers)

    (d) storage areas

Non-specialist areas are common spaces which are used for transition, personal care, resting and storage. Transparent surfaces such as glazed partitions can be used in order to take maximum daylight inside, to view the outside scenery and to enable visual accessibility and social interaction among the school members (Figure 5.12).

Figure 5.12 Circulation space, Burr Elementary School, Fairfield, Connecticut, USA (In R. Yee, *Educational Environments No. 3*. New York: Visual Reference Publications, Inc., 2007, p. 199)

Corridors can provide multiple opportunities for the users. Besides linking spaces to each other, corridors can be arranged as activity spaces, hobby areas or display areas where students' projects are exhibited (Figure 5.13). These spaces should be spacious enough in order to encourage peer support and to ensure all students including students with wheelchairs and walking aids can access to the other spaces easily. There should be visual and tactile clues in order to enable wayfinding and to orient students wih visual impairments and students with cognitive difficulties.

Figure 5.13 Circulation space, Pistorius School, Herbrechtingen, Germany
(http://www.designshare.com/index.php/projects/pistorius-schule)

B. Period 1: during school hours/**Type of use 2:** rehabilitation facilities (specialist support)

User type 1: students with diverse learning styles and special education needs

User type 2: teachers, advisors, therapists

User type 3: parents/caretakers, other family members

Spatial requirements:

(4) provision of spaces for medical treatment

(5) provision of spaces for guidance and counselling

(6) provision of spaces for therapy

    (a) physiothreapy hall with physiotherapy equipments

    (b) hydrotherapy pool

    (c) auditory, speech and language laboratories

    (d) hobby areas

(7) provision of storage spaces for medical equipments

Rehabilitation facilities should be provided in coordination with educational facilities in order to support students with special needs from inclusive education programme. All children may require medical treatment and counseling depending on their health and psychological conditions. All children will benefit from accessing to spaces for medical treatment and counselling. Physiotherapy hall with equipments, hydrotherapy pool, auditory,

speech and language laboratories and hobby areas should be provided in order to enable each student to benefit from therapy services in line with her/his particular condition. Families should also have access to these spaces in order to help and monitor their children (Figure 5.14, Figure 5.15, Figure 5.16)

Figure 5.14 Physiotherapy hall, Forbush School, Hunt Valley, Maryland, USA (In Institute for Human Centered Design website)

Figure 5.15 Physiotherapy hall, Stephen Hawking School, Tower Hamlets, London, United Kingdom (In OECD, *21st Century Learning Environments,* OECD Publishing, 2006, p. 25)

Figure 5.16 Hydrotherapy pool, Pistorius School, Herbrechtingen, Germany
(http://www.designshare.com/index.php/projects/pistorius-schule)

C. Period 1: during school hours/**Type of use 3:** collaborative support

User type 1: students with diverse learning styles and special education needs

User type 2: teachers, advisors, therapists, other staff

User type 3: parents, caretakers

Spatial requirements:

(8) teachers', advisors' and therapist's room

(9) family room for waiting, meeting and training activities

(10) ICT-enabled meeting room for face-to-face and teleconference interviews

(11) waiting hall, lobby, cafeteria and spaces for personal care

Besides classrooms, teachers and other professionals can also meet in teachers', advisors' and therapists' room. They may invite parents and students to these rooms in order to plan students' individualized education programmes, to discuss their development and to understand parents' and children's needs. Families should be provided extra spaces for waiting and training programmes. Technology integrated rooms, where remote access is provided, can enable to contact with professionals or family members who are not present in the school at that time. Waiting halls, cafeteria and service spaces should be accessible to the parents. Lobbies can also be used as activity spaces (Figure 5.17, Figure 5.18).
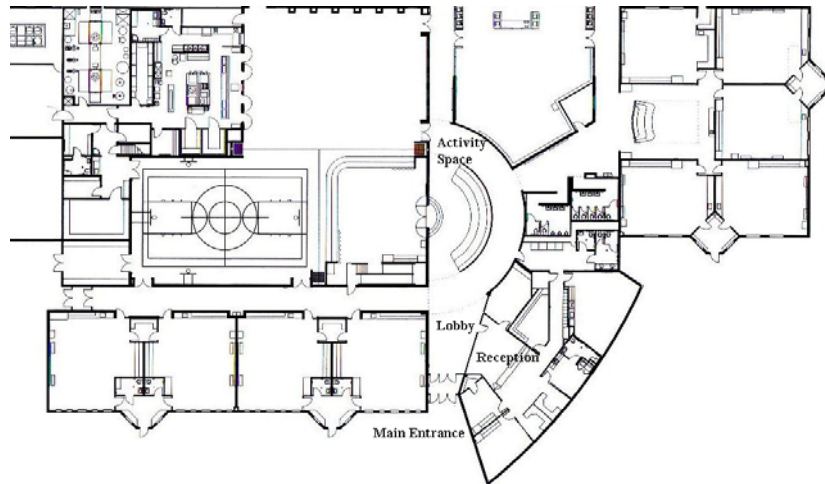
Figure 5.17 Main lobby plan, West Haven Elementary School, Utah, USA
(http://www.designshare.com/index.php/projects/west-haven-elementary/images)

Figure 5.18 Main lobby, West Haven Elementary School, Utah, USA
(http://www.designshare.com/index.php/projects/west-haven-elementary/images)

D. Period 2: out of school hours/**Type of use 4:** community-based use

User type 1: students with diverse learning styles and special education needs

User type 2: teachers, advisors, therapists, other staff

User type 3: parents, caretakers

User type 4: local community

Spatial requirements:

(11)   waiting hall, lobby, cafeteria and spaces for personal care

(12)   easily controllable, specialized or multi-purpose spaces used after school hours with separate entrance

The school should be open during the whole day and on weekends for the use of both school members and the local community and should provide multiple opportunities for the people living in that community, such as social, cultural activities and training courses. Out of school hours multipurpose hall, waiting hall, lobby, cafeteria and service areas should be open for use.

5.3 Design Aspects for Promoting Process-based and Student-centered Understanding of Inclusion

The architectural features, which can be applied to the needs of students with diverse physical, cognitive capabilities and learning styles depending on their sensory capabilities such as visual, auditory, tactile/kinesthetic, including the broad range of other users such as teachers, other school staff, parents/caretakers, siblings, other family and community members are described. Besides these features, social and technological aspects of design are also investigated, since they are assumed to maximize the capabilities of students during the inclusion process.

A. Physical Aspects
1. **accessibility/mobility**
   a. Spacious spaces allow easy movement of users with diverse abilities and needs such as students with wheelchairs, walking aids, heavy bags, etc. (large halls, access ramps, easily accessible outdoor/indoor activity/playing areas)
   b. Large indoor learning spaces can accomodate various study options such as individual/private, group study or special interest areas and at the same time can enable mobility. Learning facilities can extend to outdoor spaces which have direct access to the indoor learning spaces.
2. **flexibility/adaptability**
   a. Flexible classroom layout can accommodate a variety of different learning spaces and a variety of different functions.

b. Adaptable spaces for accomodating private/individual study or group study activities: The use of light, moveable, acoustic partition walls and sliding doors and the integration of an inner zone between teaching and circulation spaces can provide opportunity for expanding, combining or dividing spaces.

B. Cognitive Aspects

1. comprehensible layout and wayfinding

a. Spatial organisation: Students may have varying levels of spatial information processing depending on their cognitive skills. An easy-to-understand organisation between spaces which are used widely by certain type of users is required. If the layout is confusing, students with emotional and behavioral disorders will feel anxious, or students with visual impairments will find it hard to orient themselves.

b. Well-defined routes for orienting users to share the same spaces will be necessary for encouraging communication and social interaction (corridors which open to/intersect at a central space).

c. Use of perceptible information through design of signs, landmarks, application of colours and textures can enable wayfinding.

C. Sensory / Visual Aspects

1. the significance of lighting

The needs of students with full sight, partial sight, no sight, loss of colour vision, blurring of vision (astigmatism), loss of acuity (myopia/nearsightedness, hypermetropia/farsightedness) should be considered.

2. flexibility/adaptability in lighting design

The varying degrees of visual capacities require different levels of lighting. Flexible and adaptable levels of lighting can be used to overcome these conflicting needs.

…., a pupil with partial sight might require high levels of natural lighting that cannot be gained without significant structural changes to the room. Instead, the use of appropriate light bulbs and task specific light fixtures might provide an optimum solution (Hrekow, et. al. 2001:20, 21).

The difficulties pupils with visual impairments experience and their responses to light will vary. The avoidance of glare from windows, roof lights or light fixtures is important for most

pupils, but some will need additional illumination to carry out specific tasks or to ensure that teaching boards are clear (Hrekow, et. al. 2001:26).

3. **the significance of use of colour and colour contrasts**

Enhancing the colour and contrast of objects helps everyone under less than ideal lighting conditions, especially those with visual impairments, locate significant elements such as doors, door handles, changes in directions in corridors and changes in floor levels and steps. The colour of lighting, rooms and furnishings also affects pupils on a more subtle level… (Hrekow, et. al. 2001:26, 27).

D. **Sensory / Auditory Aspects**

1. **the significance of controlled noise**

Uncontrolled noise, which comes from different sources inside the classroom such as curriculum-based activities, ventilation equipment, outside the classroom such as leisure and sports activities, transportation means can be a distracting factor during lessons. Noise can be controlled through acoustic design by considering the needs of students with varying levels of hearing, sensory and visual impairment, and students with diverse learning styles (especially auditory learners).

2. **flexibility/adaptability in acoustic design**

a. Adaptability/flexibility is an important issue in acoustic design for adapting to students' conflicting needs. Hrekow, et. al. (2001:28, 29) denote the ways of manipulating acoustic conditions as removing the source of noise, reducing background noise levels, using sound insulation for walls, floors and ceilings. In some cases, removing the source of noise completely may not be a desirable solution, if there are students with varying level of visual impairments who use background noise as a guiding aid.

b. Size of the learning spaces

c. Acoustic performance of building materials

E. **Sensory / Tactile and Kinesthetic Aspects**

1. **the significance of texture**

Stimulating materials/equipments create a welcoming atmosphere for diverse users such as tactile learners, learners with sensory and emotional/behavioral impairments and students with varying degrees of visual impairments.

2. **the significance of temperature**

Conflicting needs among students should be considered and adjustable levels of room temperature should be provided. Heating and ventilation systems should be involved into design from the outset.

……pupils with limited mobility may not generate as much body heat as a fully mobile child and need higher room temperatures. Another pupil who is hyperactive may require relatively cool temperatures (Hrekow, et. al., 2001:30).

F. Social Aspects

- **visual accessibility/transparency**

    Spaces that allow visual communication between students, teachers or parents/caretakers and among other users enable social interaction and safety (through the use of large central spaces, large illuminated halls, glazed partitions between the classrooms and the halls, between the classrooms and indoor/outdoor activity/playing areas). Full transparency may be distorting in some cases, adaptable levels of transparency may be required.

- **the significance of size, shape and scale**

    Wide and illuminated corridors, atriums which enable social interaction and which accomodate indoor leisure/play activities are required.

G. Technological Aspects

- **ICT-enabled/technology integrated spaces** are required in schools to support students learning. Technological aspects are tools that maximize/enhance physical, cognitive and sensory capabilities of students and other users.

5.4 Discussion

The design aspects described in this chapter are architectural features which can be applied to design from the outset regarding the effective use of education environments after construction period in order to maximize the provision of future adaptations and additional facilities, and to minimize unforeseen expenditures. As it is illustrated in Table 5.4, there is a correspondence between the Universal Design principles that are dealing with processes and and human functions (elaborated in Chapter 2) and design aspects of inclusive education environments described depending on *process-based and student-centered understanding of inclusion* conceptualized in this thesis. In fact, these aspects are formulated depending on the

differentiation of Universal Design principles and the conceptual framework of this thesis which provides a broadened understanding of inclusion in education environments.

Table 5.3 Correspondence between Universal Design principles and design aspects for promoting process-based and student-centered understanding of inclusion

A. Physical Aspects (low physical effort, size and space for approach and use)	accessibility/mobility flexibility/adaptability
B. Cognitive Aspects (simple and intuitive use)	comprehensible layout and wayfinding
C. Sensory/Visual Aspects (perceptible information)	the significance of lighting flexibility/adaptability in lighting design the significance of use of colour and colour contrasts
D. Sensory/Auditory Aspects (perceptible information)	the significance of controlled noise flexibility/adaptability in acoustic design
E. Sensory/Tactile/Kinesthetic Aspects (perceptible information)	the significance of texture the significance of temperature
F. Social Aspects	visual accessibility/tansparency the significance of size, shape and scale
G. Technological Aspects	ICT-enabled/technology integrated spaces

The Universal Design principles dealing with human functions such as *low physical effort*, *size and space for approach* are related to *physical aspects* of design, *simple and intuitive use* is related to *cognitive aspects* of design and *perceptible information* is related to *sensory/visual*, *sensory/auditory* and *sensory/tactile/kinesthetic aspects* of design.

The Universal Design principles dealing with processes such as *flexibility in use* and *tolerance for error* are the prominent principles that should be considered during the design process. *Flexibility* and *adaptability* are compatible with all of the design aspects that are proposed in this study. Flexible and adaptable design can solve the problems resulted from the conflicting needs of diverse users in each of the design aspects and can allow for future extensions, adaptations and provision of new spaces and facilities by anticipating prospective changes in curriculum and school use.

Collaboration is a necessary condition which should be considered during different stages of planning process and to varying degrees. Hrekow, et. al. (2001:22) introduced a checklist of people who may need to be consulted in planning school design. These are architects and other design professionals, education and health specialists, governors, local authority representatives, parents/caretakers, students, school teaching staff, non-teaching school staff, therapists, voluntary organizations and other agencies. The collaborative decision-making process, which integrates the ideas of a multiprofessional team and which provides opportunity to its users for expressing their needs and views during the briefing stage of design, can fulfill the condition of *tolerance for error* principle of Universal Design, thus minimizing hazards and the adverse consequences of accidental or unintended actions during the period of use.

CHAPTER 6

CONCLUSION AND PROSPECTIVE IDEAS

Inclusion is a widely discussed theme in the society and in different disciplines. As the rights of people with disabilities became widely recognized in the society beginning from 1980s, their participation in all aspects of society was encouraged through the policies especially in United States, and in United Kingdom and other European countries. Diversity became the norm in the society. Several laws and legislations were enacted since 1980s which secure the rights of people with disabilities and enable their participation in all aspects of society. People with disabilities were not being viewed as they had a condition that set them apart from the other people anymore. Instead, the social, institutional and attitudinal barriers that prevent their inclusion began to be questioned. The inclusionary policies focused on the identification and removal of the barriers in the environment.

With the increasing sensitivity towards people with disabilities and an increasing concern for securing human rights and preventing discrimination, the legitimacy of segregating students with disabilities and placing them into special education environments began to be questioned. Integration of students with disabilities into the general education system became a preferred policy, rather than identifying them with their disabilities and confining them in special institutions.

Inclusion began to be viewed as a panacea for preventing segregation of students with disabilities and inclusion began to be misconceived as if it only implied placing them alongside with their peers in general education classrooms. However they had special needs and capabilities that should be supported by special education programmes and specially trained teachers and professionals who were equipped to provide special educational and rehabilitation services to students with different difficulties. General education environments required adaptations in order to accept these children and there were some problems. First, most of the general education teachers, who did not instruct a student with disabilities

before, were not willing to accept these students into their classrooms. Second, educational programmes and curriculum content were not prepared according to these children. Third, educational practices were traditionally providing one way of presenting knowledge to students with average skills and developmental levels. However this endeavor required a comprehensive restructuring of schools in terms of teachers' training, educational programmes and practices, and curriculum content.

While *inclusive education* system was becoming widespread, special education schools continued to provide educational and rehabilitation services for students with disabilities. Inclusive education did not come to mean that special education schools should be closed. Inclusive education claims that children with disabilities should be educated in the same environments with their peers without disabilities to the maximum extent appropriate to their special needs. If the nature and severity of disability prevents the education of children in general education environments with supplementary services, then children can be placed in special or separate education environments. This idea was reinforced by the Least Restrictive Environment principle of inclusive education which was introduced through legislations. Now, the general tendency is to place all children in the general education classrooms. If it is claimed necessary, the education environment can be changed after assessing students' needs. The degree of involvement and participation changes according to the unique needs of each individual.

As a matter of fact, there were always heterogeneous group of students in general education classrooms. However traditional education system was focusing on students with average standards. Students who deviated from these standards were forced to adapt themselves to the group with average skills and developmental levels. In time, it is understood that inclusive education was not only integrating students with disabilities who were once segregated in special education environments, but also for those who were isolated in general education environments depending on their unidentified learning difficulties, gifts and talents, social, cultural and linguistic backgrounds. Traditional general education system which was once valuing information recall and academic achievement, began to focus on enhancing students' capabilities during learning process with the advent of inclusion in education. In other words, as inclusive education system became widespread, general education practices began to notice the significance of centering all adaptations and educational services around students' needs and valued the process of learning itself.

The problems and misunderstandings regarding inclusive education system have been described in Chapter 1. As it is claimed, inclusive education is not only integrating students with disabilities in general education system. Inclusion is a comprehensive term which covers a large spectrum of individual differences depending on various factors such as age, gender, ability/disability and ethnic, cultural, linguistic and religious background. However disability is the most possible cause of discrimination in education.

Legal framework of inclusion was being constituted since 1980s worldwide. In 1990s, inclusive education became a dominant discourse. Legislations were comprehensive enough in describing how inclusive education practice should be implemented. The principles of inclusive education were clearly explained. However the progress to inclusion in practical area was much slower. There was a gap between theory and practice, since this new education system demanded a comprehensive restructuring as emphasized before. Although significant progress has been achieved in that field in time, this gap has not been closed so far.

As barriers in the environments began to be questioned, design-related disciplines began to prepare accessible design guidelines depending on the legally mandated principles for enabling the accessibility of people with disabilities through design. Experience in the field of design revealed that meeting the needs of people with disabilities generated design solutions which benefited a wide range of user groups. In 1985, *Universal Design* appeared as a strategical approach emphasizing the broad range of human diversity.

Parallel to the emphasis on *inclusion* in inclusive education literature, Universal Design considers *inclusion* as an important criterion to recognize *diversity* among all users for the sake of *equity* through its fundamental principles which address the issues of *usability*. Both inclusive education and Universal Design extended far beyond meeting the needs of people with disabilities and aimed to include all people to the maximum extent possible. However there are conflicting needs among people and it is uncertain how these diverse needs will be addressed in education and in architecture. Although Universal Design emerged as a paradigm with social and cultural underpinnings and an emphasis on social inclusion, it is criticized since it does not go beyond providing mere technical solutions. Universal Design aims to provide environments and products that enhance human functioning through its

seven principles. However it does not make any statement about how individuals' capabilities will be maximized as they use these environments and products.

As the literature on inclusive education and Universal Design has been overviewed in Chapter 2, it is understood that their understanding of inclusion differ from each other. It is claimed that Universal Design does not provide a comprehensive understanding of inclusion. The principles of inclusive education have been investigated thoroughly. It is understood that each student should be placed in the most appropriate education environment and all necessary services and adaptations should be arranged according to student's particular needs. Each student has unique capabilities. There is a gap between her/his actual level and potential level. The student can achieve her/his potential level through teacher support and instruction, however with different teaching methods for each student and at a different pace. The education process should be well organized depending on the collaboration between teachers, other professionals and parents.

Interdisciplinary studies provide an opportunity to disclose a notion in order to reveal its real meaning. In this thesis, in order to provide an understanding for the design of inclusive education environments, first the meaning of inclusion has been disclosed through understanding its legislative context and practical concern in education. Depending on these reviews, this thesis recognizes that 1. students' needs are significant in determining the adaptations in the education environments and 2. focusing on process will strengthen students' capabilities and therefore will lead to better outcomes. Thus, this study proposes a *process-based and a student-centered understanding of inclusion*.

In general education system, in order to develop effective educational approaches which address students' diverse capabilities, a search for flexible instructional methodologies began. In 1970s, educational discourse began to value diverse ways of understanding and emphasized the active role of students in knowledge construction. This student-centered understanding in education manifested itself in Piaget's cognitive constructivist approach. Later, Vygotsky emphasized the social underpinnings of knowledge construction through his social constructivist approach. He also emphasized the role of parents, teachers and peers during the process of education. Gardner also valued the diverse understandings among students and proposed that there are at least seven ways that students have for understanding the world. He claimed that educational approaches should be prepared in line with these

diverse intelligences. In addition to this, students have diverse learning styles depending on their sensory preferences and strengths.

Gardner's theory of multiple intelligences provides an opportunity for preparing flexible curriculum content and for developing adaptable educational approaches. A recent approach in education developed the idea of constructivist approaches and multiple intelligence theory further. This approach recognized the benefits of *meeting the needs of a particular group of people generates design solutions that enhance accessibility of a wider range of user groups* and borrowed the principles of Universal Design in architecture and applied it to educational programmes in order to provide flexible instructional methodologies. This recent approach is defined as *Universal Design for Learning* and it focuses on the process of accessing knowledge through multiple ways rather than presenting one way of teaching a subject. Chapter 3 overviews the educational approaches that support the idea of inclusion.

In this thesis, in order to understand the real meaning of inclusion, a comparative method is used in Chapter 3. First the literal understanding of inclusion is described in a model depending on the contradictory views and misunderstandings regarding inclusion. In this first model, environment is conceptualized as an education environment which provides one way of presenting information to students according to average standards. The boundary of the education environment is fixed and cannot be changed. Diverse selves are conceived as students whose differences are not recognized. The students are forced to adapt themselves to education environment and their boundaries blur. The students who cannot adapt themselves are excluded and isolated, their needs are overlooked.

While reviewing legislations and literature throughout the study, the real meaning of inclusion began to be disclosed. Then broadened understanding of inclusion has been conceptualized through a second model. In this model, environment is conceived as the most appropriate and the Least Restrictive Environment for the students. The boundary of the environment is flexible and can change when needed. Disabling factors in the environment can be questioned and eliminated. Flexible instructional methodologies are practiced by teachers who are equipped to meet students' diverse needs and learning styles. There is multitude ways for presenting knowledge in the education environment. There are professionals for providing special services to students. Diverse selves are conceived as students whose differences and needs are recognized and valued. Their boundaries are fixed

and reinforced through enabling their access to school facilities, learning resources and curriculum adapted according to their needs. All participants of education environment such as teachers, professionals, parents and peers are supporting students during the process of inclusion. The second model manifests that the process of becoming inclusive reveals students' potentials and enhances their capabilities during achieving knowledge. This inclusion process is getting more significant than the desired ends of education such as information recall and academic achievement, which were traditionally primary goals of education. Depending on this knowledge base and conceptual understanding, this thesis proposes that *inclusion aims at a process-based and student-centered integration of individuals* who develop capacities and achieve their full potential during the process of accessing the knowledge presented in a multiple means rather than ensuring students' access to an immediate knowledge which is presented by the teacher.

So far, an understanding of inclusion has been developed depending on legislations and literature on inclusive education. In order to have an idea of how inclusion is being practiced in education environments, a case study has been carried out and the results have been described and discussed in Chapter 4. The aim of the study is to make an interview with the teachers in order to understand their teaching practices, their ideas about inclusion and their use of education environments. Prior to the interviewing process, a preparation phase took place. First, interview questions have been prepared. The researcher has applied to *METU Human Researches Ethical Committee* with interview questions and application forms which acknowledge the aims, methods, tools, and expected results of the study, in order to conduct research according to academic and ethical rules. After having the approval of the Committee, qualitative inquiry began.

Frequently, majority of primary schools refer the notion of inclusion, as a de rigueur mission statement. However, their understanding and implementation of inclusion remains far from fulfilling the necessary standards for inclusion. There is a gap between the practice of most of the primary schools in Turkey and the legislations on inclusive education. First, a pilot study has been carried out in a primary school. This study showed the importance of finding the institution that fulfills the necessary standards for inclusion. A set of criteria has been specified for selecting the education environments where the case study will be carried out. Depending on these criteria, two schools have been identified. One of these schools is in Turkey. The teachers have been interviewed in this school. The second school, which is in

United Kingdom, has been found through a search on the Internet. A Special Education Coordinator in this school responded to the questions and sent them back by e-mail. Both teachers gave relevant answers to the questions and helped to disclose the meaning of inclusion in education. This study provided insights for understanding the practical concern of inclusive education and eliminated the misunderstandings which were obvious at the beginning of the study. The selected schools have been viewed as the effective education environments for inclusion, in terms of teachers' practices, educational adaptations and architectural organization. However during the study, teachers' responses have revealed that there is also a gap between theory and practice in these institutions.

Interviews also provided hints about some design aspects in inclusive education environments. The case study in Chapter 4 revealed that usability is an important criterion for assessing the physical education environments. Teachers' answers provided information about the participants who use the education environments (user type), for what type of activity (type of use) and how long the education environments are being used (the period/frequency of use). The answers reveal teachers' and students' use of education environments and teachers' views about ideal arrangement of classrooms. Teachers were willing to share their suggestions and expectations regarding the design of inclusive education environments. This showed the significance of integrating teachers' ideas into design process.

Inclusion, as a worldwide discussed theme of the 21st century, is a challenging notion in most of the disciplines. While education aims to involve all children into the system through adapting its infrastructure, architecture intends to provide equal opportunities of use and access for all in the built environment through Universal Design paradigm. This study is a search for a common framework in education and architecture for promoting inclusion of all children in primary schools. Despite the potential of Universal Design principles for bringing education and architecture together for this common goal, Universal Design approach remains limited for promoting a comprehensive understanding of inclusion.

Inclusive education challenges architects to take action for developing effective design approaches in order to create inclusive education environments. Rather than presenting ideal, concrete, particular architectural solutions for the design of primary education environments,

this study emphasizes the benefits of the knowledge of inclusive education for challenging architects to reveal their creative imaginations during briefing stage of design.

Chapter 5 clarifiries the architectural implications of the study, differentiates the principles of Universal Design and elaborates the term usability. This thesis outlines the spatial requirements and design aspects to be considered during design process and proposes that there is a correspondence between Universal Design principles and design aspects of inclusive education environments described depending on *process-based and student-centered understanding of inclusion* conceptualized in this thesis. Figures are used to illustrate some aspects of this thesis' approach to inclusion. They do not represent ideal solutions for inclusive environments. In fact, there is not a particular design solution. The findings of this study intend to guide architects during briefing stage of design. In this study, architectural principles of inclusive education environments are kept in abstract level and open for interpretations of architects' creative imaginations.

In the world, recently schools are being conceptualized as integrated environments where different types of facilities -for supporting children- merge. "The function of educational facilities is extending beyond that of a learning institution. Increasingly, educational facilities are housing a range of non-educational services – healthcare, childcare, and family and other support services – that are available to students, teachers and community members throughout the year" (OECD, 2006: 26).

This study claims that in Turkey, schools should be conceived as a different type of facility than today's schools. Their opportunities should be maximized with the integration of other facilities. Tomorrow's schools should integrate education, health-care and community facilities not only for the sake of a group of people with special needs, but also for all students and the people living in that community. Provision of integrated facilities on school grounds will ensure a healthy living community whose members have their capabilities maximized, participate in every aspect of the social life, value and respect diversities.

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ETHICAL COMMITTEE APPLICATION FORM

Orta Doğu Teknik Üniversitesi İnsan Araştırmaları
Etik Kurulu Başvuru Formu

Orta Doğu Teknik Üniversitesi (ODTÜ) bünyesinde yapılan ve/ya ODTÜ çalışanları/öğrencileri tarafından yürütülen ve insan katılımcılardan bilgi toplamayı gerektiren tüm çalışmalar, ODTÜ İnsan Araştırmaları Etik Kurulu incelemesine tabidir. Bu başvuru formu doldurulduktan sonra diğer gerekli belgelerle birlikte ODTÜ İnsan Araştırmaları Etik Kuruluna başvuru yapılmalıdır. Çalışmalar, Etik Kurulun onayının alınmasından sonra aktif olarak başlatılmalıdır.

1. Araştırmanın başlığı _____

2. Araştırmanın niteliği (Uygun olan kutuyu işaretleyiniz)

   ☐ Öğretim Üyesi Araştırması   ☐ Doktora Tezi

   ☐ Yüksek Lisans Tezi   ☐ Diğer (belirtiniz)

3. Araştırmacının/Araştırmacıların:

   Adı-Soyadı _____ Bölümü _____ Telefonu _____

   Adresi_____ E-posta adresi _____

4. (Varsa) Danışmanın: Adı-Soyadı _____ Telefonu_____

5. Veri Toplanacak Dönem: Başlangıç _____/____/_____ Bitiş _____/____/_____

6. Veri Toplanması Planlanan Yerler/Mekanlar, Kurum ve Kuruluşlar:

   a. _____   e. _____

   b. _____   f. _____

   c. _____   g. _____

   d. _____   h. _____

7. Çalışmanın/Projenin desteklenip desteklenmediği: ☐ Desteksiz ☐ Destekli

   Desteklenen bir proje ise, destekleyen kurum: ☐ Üniversite ☐ TÜBİTAK

   ☐ Uluslararası (belirtiniz) _____   ☐ Diğer (belirtiniz) _____

8. Başvurunun statüsü: ☐Yeni başvuru   ☐ Revize edilmiş başvuru ☐ Bir önceki projenin devamı

   Bir önceki projenin devamı ise, yürütülen çalışma önceden onaylanan çalışmadan herhangi bir farklılık gösteriyor mu?   ☐ Evet   ☐ Hayır

Evet ise açıklayınız: _____

9. Çalışma katılımcılara, herhangi bir şekilde yanlı/yanlış bilgi vermeyi, çalışmanın amacını tamamen gizli tutmayı gerektiriyor mu? ☐ Evet   ☐ Hayır

   Evet ise açıklayınız: _____

10. Çalışma katılımcıların fiziksel veya ruhsal sağlıklarını tehdit edici sorular/maddeler, prosedürler ya da manipülasyonlar/uygulamalar içeriyor mu? ☐ Evet   ☐ Hayır

    Evet ise açıklayınız: _____

11. Katılımcı sayısı: _____

12. Kontrol grup kullanılacak mı?: ☐ Evet   ☐ Hayır

13. Aşağıda sunulan listeden, çalışmanın katılımcılarını en iyi tanımlayan seçenekleri işaretleyiniz.

    ☐ Üniversite Öğrencileri

    ☐ Çalışan Yetişkinler

    ☐ Halihazırda İş Sahibi Olmayan Yetişkinler

    ☐ Okul Öncesi Çocuklar

    ☐ İlköğretim Öğrencileri

    ☐ Lise Öğrencileri

    ☐ Çocuk İşçiler

    ☐ Yaşlılar

    ☐ Zihinsel Engelli Bireyler

    ☐ Fiziksel Engelli Bireyler

    ☐ Tutuklular

    ☐ Diğer (belirtiniz) _____

14. Aşağıda yer alan uygulamalardan, çalışma kapsamında yer alacak olanları işaretleyiniz.

    ☐ Anket

    ☐ Mülakat

    ☐ Gözlem

    ☐ Bilgisayar ortamında test uygulamak

    ☐ Video/film kaydı

    ☐ Ses kaydı

    ☐ Alkol, uyuşturucu ya da herhangi bir kimyasal maddenin katılımcılara kullandırılması

    ☐ Yüksek düzeyde uyarıma (ışık, ses gibi) maruz bırakma

    ☐ Radyoaktif materyale maruz bırakma

    ☐ Diğer (belirtiniz) _____

APPENDIX B

ETHICAL COMMITTEE PROJECT INFORMATION FORM

1. Write the detailed description of your study by including your hypothesis.
2. Write your data collection process including the methods, scale, tools and techniques to be used. (Deliver one copy of any kind of scale and questionnaire with this document.)
3. Enter the expected results of your study.
4. Does your study include factors threatening participants' physical and/or psychological health or is a source of stress for them? If yes, please explain. Explain the measures that are to be taken in order to eliminate or minimize the effects of these factors.
5. Is it a matter of question of concealing the aims of the study from the participants completely or partially? If yes, please explain. Describe how this condition will be explained to the participants at the end of the study.
6. Please explain the potential contributions of your study to your area of research and/or to the society.
7. Enter the titles, dates of your previously conducted research or the studies that you participated and (if exists) the names of institution/s that provide support for your research/es.

Researcher's : Name-Surname _____ Signature _____

Advisor's   : Name-Surname _____ Signature _____

APPENDIX C

ETHICAL COMMITTEE INFORMED CONSENT FORM

This study is being carried out by Selen Durak, PhD student in Middle East Technical University, Faculty of Architecture, Department of Architecture. The aim of this study is to obtain information from teachers implementing inclusive education related to the use of spaces in the school (by whom, for what and when/how long). Participation to the study should be on a voluntary basis. In this study, two methods have been adopted.

1. Turkish teachers will be interviewed and some questions will be posed to them. Interview will take approximately 20 minutes. During the interview, any identifying information will not be requested. The responses will be recorded on a voice recorder and will only be evaluated by the researcher. This interview will be kept completely confidential and the information obtained will be used in the researcher's doctoral thesis and scientific publications. During the interview, the teachers will not be addressed any questions that will give personal discomfort. However, while participating, if they feel uncomfortable depending on the questions they are welcome to abandon the interview.

2. Same questions will be posed to teachers in foreign countries in a written format and will be sent through Internet to their schools' mail addresses. If teachers accept to participate, they will be asked to return their responses back to the researcher's e-mail address.

In order to learn more about this study, you can communicate with the researcher. Thank you in advance for participating in this study.

I agree to participate in this study completely voluntary and I know that I am free to abandon whenever I want. I agree that the information that I give during the interview to be used in the researcher's doctoral thesis and scientific publications. (Please return the form to the researcher after you fill out and sign).

Name/Surname   Date   Signature

----/----/2010

APPENDIX D

ETHICAL COMMITTEE DEBRIEFING FORM

This study has been carried out by Selen Durak, who is a PhD student in Middle East Technical University, Faculty of Architecture, Department of Architecture, to be used in her doctoral research. This study sought for effective design approaches in order to promote inclusive education practices in primary schools. Therefore, through an individual interview the ideas, practices and experiences of Turkish teachers related to inclusive education and their needs and demands related to physical school environment have been understood. During the interview, voice recorder has been used and the teachers have been informed about the use of research tools before. A teacher working in an inclusive school in United Kingdom is accessed via Internet and asked to respond to the questions sent to her in a written format. These interviews have been analysed and interpreted by the researcher.

Through the data obtained from the interviews with teachers, by revealing the use of education environments during the implementation of inclusive education practices, spatial requirements and design aspects of inclusive education environments have been determined. This study assumes that architects will interpret this knowledge during pre-design research of inclusive education environments and will differentiate it into a form which will inspire their creative imaginations. The data obtained will only be used in the researcher's doctoral thesis and scientific publications. In order to receive more comprehensive information about this research, you can apply to the researcher.

DATA COLLECTION TOOLS: INTERVIEW QUESTIONS

A. Questions Regarding Primary School Teachers in Inclusive Education Environments

1. Please indicate your bachelor degree university/faculty/department.
2. Please indicate your graduation year.
3. Please indicate your area of expertise.
   a) If you are a *special education teacher*, please indicate your interest area in education about the type of special education needs.
   b) If you are a *general education teacher*, please indicate whether you have participated in a certificate programme or seminar regarding individuals with special education needs.
4. Please indicate whether you have participated in training on inclusive education during your education or after your graduation.

B. Questions Regarding Implementation of Inclusive Education in Primary Schools

5. What is your opinion about the most prominent differences that distinguish *inclusive education* from *special education* and *traditional education system*?
6. How does the role of the teacher in *inclusive education system* differ from the teacher's role in *traditional education system*?
7. In inclusive education system, how many different types of education experts are responsible from the education of students with special education needs and students with different learning types? (general education teacher, special education teacher, advisor, etc.)

8. Do you think different types of education experts cooperate? *(If yes, please answer the items below.)*
   a) Please indicate the frequency of cooperation.
   b) Please indicate where the cooperation takes place.
9. Do the educators meet with families of children on a regular basis? *(If yes, please answer the items below.)*
   a) Please indicate the frequency of such meetings.
   b) Please indicate where the meetings take place?

C. Questions Regarding the Use of Physical Environments in Primary Schools During the Implementation of Inclusive Education System

The questions posed in this part are intended for understanding the type of education environments, the type and the frequency of use, and the type of users during the implementation of inclusive education system in a primary school.

Questions regarding to understand the use of education spaces

10. Which courses are given in classrooms?
11. Which courses are given in different learning spaces? Please indicate the type of spaces most often used.
12. Please indicate the number of students in the classroom during your course.
13. Are there occasions that *other education experts participate in the classroom with you* during your course? *(If yes, please answer the items below.)*
    a) Please indicate their field of expertise (special education teacher, advisor).
    b) Please indicate the frequency and the courses during which cooperation takes place.
    c) Please explain the students' and the education experts' use of classroom space for the occasions below, with a simple diagram.
       ▪ Tutoring whole-class
       ▪ Group study
       ▪ Private/individual study
       ▪ Student presentations
       ▪ Other

14. Please explain your and your students' use of classroom space during your course with a simple diagram.

   - Tutoring whole-class
   - Group study
   - Private/individual study
   - Student presentations
   - Other

15. Are there special interest areas for different interests of students?

16. Are there adequate spaces for storage of daily used individual materials, equipments or learning materials inside the classrooms?

17. Are the classrooms flexible? For example, can you divide or join adjacent classrooms depending on the type of use?

18. Are there common areas for the use of a number of classrooms?

19. Do the classrooms have direct access to outside?

Questions regarding to understand the use of support spaces

20. Which spaces are used for supporting students with special education needs?

21. Do the students with special education needs who attend regularly in inclusive classrooms have courses during certain hours in different learning spaces? *(If yes, please answer the items below.)*

   a) Please indicate the spaces they use and explain the use of these spaces with a diagram.

   b) Please indicate the number of students and education experts who are present in these spaces.

   c) Please indicate the frequency and the time period for the use of these spaces.

22. Are there spaces for the use of families? *(If yes, please answer the items below.)*

   a) Please explain the use of spaces with a simple diagram.

   b) Please explain the relation of these spaces with the support spaces (in terms of proximity, visual interaction).

Questions regarding to understand the use of circulation spaces (including main entrance, corridors and exits)

23. Are the circulation spaces organized according to physical, cognitive and sensory (visual, auditory, tactile) differences, to enable users access to the learning spaces which they use during the day easily and to move freely/independently?
24. Are the circulation spaces organized as reinforcing visual and social interaction between all users?

Questions regarding to understand the use of common spaces

25. Are there play and activity spaces for students' use out of school hours? (indoor and outdoor spaces)
26. Are these spaces organized to address students' diverse needs and interests? Please explain through samples.
27. Are these spaces open for common public use out of school hours besides the use of students, teachers and families? *(If yes, please answer the items below.)*
    a) Please explain the use of these spaces with a simple diagram.
    b) Are these spaces have separate entrances and service areas?

D. Suggestions/Expectations

Please indicate if you have suggestions/expectations regarding design criteria of learning spaces mentioned above which architects should consider during design process.

INTERVIEW QUESTIONS (IN TURKISH)

A. Kaynaştırma Eğitim Sistemi Uygulanan İlköğretim Okullarında Görev Yapan Eğitimciler ile İlgili Sorular

1. Mezun olduğunuz üniversite, fakülte ve bölümü belirtiniz.
2. Mezuniyet yılınızı belirtiniz.
3. Uzmanlık alanınızı belirtiniz.
   a) *Özel eğitim* ise, uzmanlık alanınız hangi tip özel eğitim ihtiyacı olan bireyleri kapsamaktadır?
   b) *Sınıf öğretmenliği* ise, özel eğitim ihtiyacı olan bireylerle ilgili bir sertifika programına veya seminere katıldınız mı?
   c) *Branş öğretmenliği* ise, özel eğitim ihtiyacı olan bireylerle ilgili bir sertifika programına veya seminere katıldınız mı?
4. Eğitiminiz süresince veya mezun olduktan sonra *kaynaştırma* ile ilgili bir eğitime katıldınız mı?

B. İlköğretim Okullarında Kaynaştırma Eğitim Sisteminin Uygulanmasına Yönelik Sorular

5. Sizce *kaynaştırma eğitimini*, *özel eğitimden* ve *geleneksel eğitimden* ayıran en belirgin farklar nelerdir?
6. *Kaynaştırma eğitim sisteminde* öğretmenin rolünü, *geleneksel eğitim sisteminden* farklı olarak nasıl değerlendirirsiniz?
7. *Kaynaştırma eğitim sisteminde*, özel eğitim ihtiyacı olan ve farklı öğrenen öğrencilerin eğitiminden sorumlu kaç farklı eğitim uzmanı bulunmaktadır? (sınıf öğretmeni, özel eğitim öğretmeni, rehber öğretmen vs.)

8. Farklı eğitim uzmanları arasında işbirliği var mı? *(Evet ise, aşağıdaki maddeleri yanıtlayınız.)*

   a) Bu işbirliği hangi sıklıkta gerçekleşmektedir?

   b) Bu işbirliği ne tür fiziki ortamlarda gerçekleşmektedir?

9. Eğitimciler ailelerle düzenli olarak görüşüyor mu? *(Evet ise, aşağıdaki maddeleri yanıtlayınız.)*

   a) Bu görüşmeler hangi sıklıkta gerçekleşmektedir?

   b) Bu görüşmeler ne tür fiziki ortamlarda gerçekleşmektedir?

C. Kaynaştırma Eğitim Sisteminin Uygulanması Sırasında İlköğretim Okullarında Fiziksel Çevrenin Kullanımını Anlamaya Yönelik Sorular

Bu bölümde sorulan sorular, bir ilköğretim okulunda kaynaştırma eğitim sistemine ait müfredat uygulanırken hangi tip eğitim mekanlarının bulunması gerektiğini, bu mekanların kullanım şeklini ve sıklığını, ve hangi tip kullanıcılar tarafından kullanıldığını anlamaya yöneliktir.

Ders verilen mekanların kullanımını anlamaya yönelik sorular

10. Hangi dersler sınıflarda yapılmaktadır?

11. Hangi dersler farklı mekanlarda yapılmaktadır? Kullanılan farklı mekan tiplerini belirtiniz.

12. Dersiniz esnasında, sınıfta bulunan öğrenci sayısını ve özelliklerini belirtiniz.

13. Dersiniz esnasında, sınıfta *sizinle birlikte diğer eğitimcilerin bulunduğu durumlar* oluyor mu? (*Evet ise, aşağıdaki maddeleri yanıtlayınız.*)

    a) Hangi uzmanlık alanından eğitimciler bulunuyor? (özel eğitimci, rehber öğretmen)

    b) Hangi sıklıkta ve hangi dersler için bu tür bir uygulama yapılıyor?

    c) Aşağıdaki durumlar için öğrencilerin ve eğitim uzmanlarının mekan kullanımını şematik olarak gösteriniz.

       - Tüm sınıfa ders anlatımı
       - Grup çalışması
       - Bireysel çalışma
       - Öğrenci sunumları

◾ Diğer

14. Dersiniz esnasında, aşağıdaki durumlar için, sınıfta sizin ve öğrencilerinizin mekan kullanımını şematik olarak gösteriniz.

- ◾ Tüm sınıfa ders anlatımı
- ◾ Grup çalışması
- ◾ Bireysel çalışma
- ◾ Öğrenci sunumları
- ◾ Diğer

15. Sınıfların içinde özel ilgi alanlarına yönelik köşeler var mı?

16. Sınıfların içinde günlük kullanılan kişisel eşyaların veya ders araç gereçlerinin depolanması için yeterli alan var mı?

17. Sınıflar, kullanım şekline bağlı olarak bölünebiliyor veya birleşebiliyor mu?

18. Birkaç sınıf için ayrılan ortak kullanım alanları var mı?

19. Sınıflar dış mekana açılabiliyor mu?

Destek mekanlarının kullanımını anlamaya yönelik sorular

20. Özel eğitim ihtiyacı olan bireylerin desteklenmesine yönelik mekanlar nelerdir?

21. Kaynaştırma sınıfında özel eğitim ihtiyacı olan öğrenciler belirli saatlerde farklı mekanlarda ders görüyor mu? (*Evet ise, aşağıdaki maddeleri yanıtlayınız.*)

a) Hangi mekanları kullanıyorlar? (Bu mekanların kullanımını şematik olarak açıklayınız.)

b) Bu mekanlarda kaç öğrenci ve kaç eğitimci bulunuyor?

c) Bu mekanları ne sıklıkta ve kaç saat süreyle kullanılıyor?

22. Ailelerin kullanımı için ayrılan mekanlar var mıdır? *(Evet ise, aşağıdaki maddeleri yanıtlayınız.)*

a) Bu mekanların kullanımını şematik olarak açıklayınız.

b) Bu mekanların destek mekanları ile ilişkisini açıklayınız (yakınlık, görsel iletişim vs. açısından).

Dolaşım alanlarının kullanımını anlamaya yönelik sorular (ana giriş, koridorlar ve bahçe çıkışları dahil olmak üzere)

23. Dolaşım alanları, fiziksel, bilişsel ve algısal farklılıklar (görsel, işitsel ve dokunsal vs.) göz önüne alınarak, tüm kullanıcıların gün içinde kullanacakları eğitim mekanlarına kolayca ulaşabilmelerine ve rahat/bağımsız hareket etmelerine olanak sağlayacak şekilde düzenlenmiş mi?

24. Dolaşım alanları tüm kullanıcıların birbirleri ile görsel ve sosyal iletişimini güçlendirecek şekilde düzenlenmiş mi?

Ortak alanların kullanımını anlamaya yönelik sorular

25. Ders haricinde öğrencilerin oyun ve aktivite amaçlı kullanımı için ayrılmış mekanlar var mıdır? (açık ve kapalı alanlar)

26. Bu mekanlar, öğrencilerin farklı ihtiyaçlarına ve farklı ilgi alanlarına hitap edecek şekilde düzenlenmiş midir? Örneklerle açıklayınız.

27. Bu mekanlar, ders haricinde öğrenci, eğitimci ve ailelerin yanı sıra, kamusal kullanıma da olanak sağlıyor mu? *(Evet ise, aşağıdaki maddeleri yanıtlayınız.)*
    a) Bu mekanların kullanımını şematik olarak açıklayınız.
    b) Bu mekanların ayrı giriş çıkışları ve servis mekanları var mıdır?

D. Önerileriniz/Beklentileriniz

Mimarların yukarıda bahsedilen eğitim mekanlarının tasarımında göz önünde bulundurmaları gereken tasarım kriterleri hakkında önerileriniz/beklentileriniz varsa belirtiniz.

APPENDIX G

APPROVAL OF HUMAN RESEARCHES ETHICAL COMMITTEE

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Orta Doğu Teknik Üniversitesi
Middle East Technical University

Fen Bilimleri Enstitüsu
Graduate School of
Natural and Applied Sciences

06531 Ankara, Türkiye
Phone: +90 (312) 2102292
Fax: +90 (312) 2107959
www.fbe.metu.edu.tr

Sayı: B.30.2.ODT.0.AH.00.00/126/ 62

30 June 2010

To   :   Assoc. Prof. Dr. Mualla Erkılıç
             Department of Architecture

From   :   Prof. Dr. Canan Özgen
             Vice Chairperson of Human Research Ethic
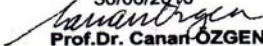   Committee

Subject   :   Ethical Approval

The study titled "Searching for a Common Framework for Education and Architecture through Reconsideration of Universal Design Principles for Promoting Inclusive Education in Primary Schools" was approved by "Human Researches Ethical Committee".

Sincerely,

Ethic Committee Approval

Uygundur

30/06/2010

Prof.Dr. Canan ÖZGEN
Uygulamalı Etik Araştırma Merkezi
(UEAM) Başkanı
ODTÜ 06531 ANKARA

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CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name : Durak, Selen

Nationality : Turkish (T.C.)

Date and Place of Birth : 29 May 1974, Bursa

Phone : +90 224 2344618

e-mail : selendurak@gmail.com

EDUCATION

Degree	Institution	Year of Graduation
M.Arch	Uludağ University Department of Architecture	2003
B.Arch	METU Department of Architecture	1996
High School	Bursa Anatolian High School	1992

WORK EXPERIENCE

Year	Place	Enrollment
2004-Present	Selen Mimarlık Design Office, Bursa	Architect
2001-2003	Uludağ University Department of Architecture, Bursa	Res. Assistant
1997-2000	SINTA A.Ş. Construction Company, Bursa	Architect
1997	DE-KA Ltd. Şti. Design Office	Architect
1996-1997	AL-PIM Ltd. Şti. Building Materials Company	Architect

FOREIGN LANGUAGES

Advanced English, Intermediate German

PUBLICATIONS

Article in an International Journal Indexed by Arts and Humanities Citation Index

Durak S., Erbil Y. Akıncıtürk N. 2010. "Sustainability of an Architectural Heritage Site in Turkey: Fire Risk Assessment in Misi Village". International Journal of Architectural Heritage: Conservation, Analysis and Restoration, Taylor &Francis Group, United Kingdom (accepted to be published).

Article in an International Journal Indexed by Applied Social Sciences Index and Abstracts

Durak, S. 2009. "Taking A High Scope Approach In A Turkish Preschool: Assessing The Physical Environment And The Promotion Of Positive Adult-Child Interaction", The International Journal of Learning, vol. 16, issue 3, pp. 31-48. Common Ground Publishing, Melbourne, Australia.

Article in a National Journal

Durak, S. 2009. "19. Yüzyılın İkinci Yarısında Bursa'da Ulaşım ve Bursa-Mudanya Demiryolu Hattı", Bursa Defteri, sayı: 33-34, Mart 2009. Bursa: Bursa Kültür ve Sanat Yayınları A.Ş. s. 68-78.

PAPERS PRESENTED IN CONGRESSES

Papers Presented in International Congresses (Full-Paper published)

1. Durak, S. 2009. "Children's Participation in Primary School Design". ARCHILD–1. Uluslararası Mimarlık ve Çocuk Kongresi Bildiriler (International Congress Architecture & Children, Proceedings). 18-21 November 2009, Ankara: Chamber of Architects. pp. 333-342.

2. Durak, S. and Dostoğlu, N. 2008. "19. Yüzyılda Anadolu'da Demiryolu Ulaşımının Kentlerin Mekansal Yapısı Üzerindeki Etkileri - Effects of Railway Transportation on Spatial Structure of Anatolian Cities in the 19th Century ", IRS Turkey Second International Railway Symposium, Proceedings, İstanbul, Turkey, 15-17 October 2008, vol. 2, 1247-1257.

3. Durak, S. 2009. "Taking A High Scope Approach In A Turkish Preschool: Assessing The Physical Environment And The Promotion Of Positive Adult-Child Interaction", The International Journal of Learning, vol. 16, issue 3, pp. 31-48. Common Ground Publishing, Melbourne, Australia.

Paper Presented in UIA World Congress (Abstract published)

Durak, S. 2008. "A Human-Centered Approach In Architecture: Concern For Diversity, Equality And Human Rights In Human Settlements, XXIII UIA World Congress Of Architecture, Torino, Italy. 29 June-03 July 2008.

Paper Presented in a National Congress (Full-Paper published)

Durak, S. 2007. Bursa-Mudanya Demiryolu Hattı ve İstasyon Binaları, Bursa'nın Kentsel ve Mimari Gelişimi Sempozyum Kitabı, Ed. C. Çiftçi", Osmangazi Belediyesi Yayınları, Bursa. s. 197-226. 7-8 Nisan 2007.

Poster Presented in a National Congress (published)

Durak, S. (2008) Bursa'da Yaşayan Tarih: Vilayet, Adliye, Maliye Binaları. Türkiye Mimarlığında Modernizmin Yerel Açılımları, Docomomo Poster Sunuşları. Uludağ Üniversitesi, Mühendislik Mimarlık Fakültesi, Mimarlık Bölümü, Bursa. 26-27 Aralık 2008.

FELLOWSHIPS

Common Ground Publishing Graduate Student Assistantship Fee Waiver Grant
The Sixteenth International Conference on Learning, University of Barcelona, Barcelona, Spain 1-4 July 2009

TUBITAK Overseas Scientific Activities Participation Grant
The Sixteenth International Conference on Learning, University of Barcelona, Barcelona, Spain 1-4 July 2009

OTHER DUTIES

Graduate Assistant during the Sixteenth International Conference on Learning for chairing and timekeeping during parallel sessions, University of Barcelona, Barcelona, Spain 1-4 Temmuz 2009

Associate Editor in The International Journal of Learning Vol. 16

MEMBERSHIPS

TMMOB, Bursa Chamber of Architects since 1996

PROFESSIONAL DEVELOPMENT SEMINARS

Year	Theme	Organized by
2007	Energy Efficient Buildings Construction Project Management Architecture and Glass Design	Bursa Chamber of Architects
2008	Fundamental Concepts in Architectural Services	Bursa Chamber of Architects