# BUILDING MINDS

Designing Learning Spaces for Connection & Coherence





Dedicated to our dear friend Ed Kirkbride, philosopher, architect extraordinaire, and the greatest connector we've known. Thank you Ed, for your lifetime of service to the children of the world.

# **BUILDING MINDS**

Designing Learning Spaces for Connection & Coherence



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Association for Learning Environments

BUILDING MINDS. Designing Learning Spaces for Connection & Coherence

#### \$35 ARCHITECTURE, INNOVATIVE SCHOOL DESIGN, EDUCATION, SCHOOL REFORM

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# PREFACE



Learn how to see. Realize that everything connects to everything else.

Imagine a world where the boundaries we've drawn between ourselves—of religion, nationality, color cease to exist. Picture a society where, instead of focusing on what makes us different, we celebrate what unites us as people. A world where every person is seen as part of a single, united family—as ancient Indian wisdom, Vasudhaiva Kutumbakam, calls it. In such a world, there would be no wars, atrocities, violence, or crime, for we would recognize that by harming another, we harm ourselves.

This vision shouldn't just be a utopian dream; it must be a possibility, a future for humanity that we must all strive for. But to bring this future to life, we must start where all true change begins—with our children. It is in their formative years, in the environments where they learn and grow, that the foundation for this new, gentler, kinder world can be developed.

Children are like sponges, absorbing what they see, hear, and experience around them. The influences they encounter in their school environment leave lasting imprints on their hearts and minds, shaping how they perceive themselves, others, and the world. These early experiences are not just fleeting moments; they are the seeds that will grow into the beliefs, values, and actions that guide them throughout their lives. And, as these children grow into adults, those seeds bear fruit, influencing the future of our world.

As Mahatma Gandhi wisely said, "If we are to reach real peace in this world . . . we shall have to begin with the children." This book is a call to action: a framework for how we can start this change. It is an exploration of how we can build educational environments that go beyond silos, that foster connections instead of divisions, that teach our children to see the world as one family.

In these pages, we reject the fragmented, compartmentalized approach that has dominated education and society at large. Instead, we advocate for an integrated vision—one that sees learning, well-being, and humanity as interconnected threads of the same fabric. This book is not just about creating better schools; it is about creating a better world.

# INTRODUCTION

Human development is deeply rooted in an essential need for connections. We thrive when we positively connect with ourselves, others, and the environment. This fundamental need spans various dimensions of our lives, impacting emotional, psychological, and cognitive growth.

Abraham Maslow was one of the first scholars to comprehensively discuss the importance of connections with self, others, and the environment. In his seminal book, *Toward a Psychology of Being* (1962, revised in 1968), Maslow's concept of self-actualization within the "hierarchy of needs" emphasizes the significance of self-connection through realizing one's full potential and finding meaning within oneself. Maslow also highlighted the importance of social connections and relationships through the need for love, belonging, and esteem. His discussion on aesthetic and cognitive needs also underscores the importance of a harmonious relationship with one's surroundings. In his later works, Maslow introduced the concept of self-transcendence, which involves transcending beyond the self and finding a higher purpose, unequivocally highlighting the importance of these connections.

In educational settings, the design of physical spaces plays a critical role in fostering these connections. Thoughtfully designed environments can transform learning experiences by promoting collaboration, engagement, and well-being. Lev Vygotsky's sociocultural theory of cognitive development emphasizes the importance of connections, which posits that social interaction is fundamental to cognitive development.



**FIGURE 1.1** Vygotsky's sociocultural theory highlights the importance of connections in cognitive development.

Vygotsky's research shows that learning is inherently a social process, and environments that encourage collaboration and mutual understanding significantly enhance both learning and personal development. This aligns with the neurological basis for learning, as studies by contemporary neuroscientists like Louis Cozolino, indicate that emotional and social connections are crucial for effective learning.

"Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological). This applies equally to voluntary attention, logical memory, and the formation of concepts. All the higher functions originate as actual relationships between individuals."

-Lev Vygotsky

Connection with oneself is equally important. Modern psychological approaches, such as those advocated by Carol Dweck's growth mindset theory, emphasize the importance of self-actualization and the need for individuals to connect with their true selves. Dweck's research suggests that creating environments where students can explore their identities and develop self-awareness is crucial for personal and academic growth.

Furthermore, our connection to both the natural and built environments plays a critical role in our development as humans. The biophilia hypothesis, proposed by biologist E.O. Wilson and supported by recent studies in environmental psychology, suggests that humans have an innate affinity for nature, which is essential for our well-being.

"Biophilia, the innate tendency to focus on life and lifelike processes, is an essential part of the human psyche. Schools should incorporate nature into their design to nurture this connection in students."

-Attributed to E.O. Wilson

Modern psychological approaches, such as those advocated by Carol Dweck's growth mindset theory, emphasize the importance of self-actualization and the need for individuals to connect with their true selves.



**FIGURE 1.2 Before:** The building on the left is the intermediate school before the renovation. This area separates the intermediate school building from the library on the right. Not only is there no direct connection between the two buildings, but this area between them is wasted and not used in any way. Notice also that the small high windows limit the amount of daylight coming into the building, and there are no views to the outside green areas either.



**FIGURE 1.3 After:** This image shows a new trellis that connects the renovated intermediate school (previous photo) with the existing library building. The sheltered area between the two buildings now becomes another great space for outdoor learning. Also note how the entire face of the building has been opened up via glass doors and picture windows. Such examples are important because they showcase how modest improvements in the built environment can positively impact the sociocultural development of students.

Integrating natural elements into learning environments can enhance students' cognitive function, emotional well-being, and overall health. Recent research has shown that exposure to well-designed environments, including natural settings and thoughtfully constructed spaces, can reduce stress, improve attention, and foster a sense of connectedness to the world around us. By prioritizing these elements, we can create holistic educational environments that support all learners. Figures 1.2 and 1.3 illustrate how thoughtful design of learning spaces can help children feel connected to the world around them while improving their cognitive abilities and enhancing their overall learning experience.

Well-designed environments, including natural settings and thoughtfully constructed spaces, can reduce stress, improve attention, and foster a sense of connectedness to the world around us.

When connections with oneself, others, and the environment are healthy and positive, they lay the foundation for connecting with transcendence. As described by Mihaly Csikszentmihalyi, being in a state of flow is one way to connect to transcendence.



FIGURE 1.4 Achieving transcendence through deep connections.

#### INTRODUCTION

This connection helps our children become not just good learners but whole people. Understanding and integrating transcendence in education supports the development of self-awareness, empathy, and a sense of purpose, contributing to the holistic growth of students, which leads us into this book's second part, where "becoming human" is the central idea and the goal around which learning spaces and learning systems must be designed.

"The process of becoming a whole person is an ongoing journey of discovery, openness, and courage. In which you reach higher and higher levels of integration and harmony within yourself and with the outside world, allowing greater flexibility and freedom to become who you truly want to become. Since you are always in a state of change, you are always in a state of becoming."

-Transcend: The New Science of Self-Actualization

Despite our advanced understanding of these intrinsic human needs, many educational systems are still rooted in outdated paradigms from the industrial age. These models emphasize isolation, competition, and a one-size-fits-all approach, which starkly contrast with our natural tendencies for collaboration, self-discovery, and connection with the environment.

Innovative educational reformers like the late Sir Ken Robinson and Sugata Mitra have highlighted the need for a radical overhaul of traditional educational systems.

"When people are in their Element, they connect with something fundamental to their sense of identity, purpose, and well-being."

-Ken Robinson

They advocated shifting from standardized testing and rigid curricula to more personalized, studentcentered approaches. Robinson's vision of fostering creativity and Mitra's work on self-organized learning environments (SOLEs) illustrate the potential for transformative change in education. Their ideas align with Maria Montessori's philosophy, emphasizing the importance of self-directed learning and the prepared environment. This shift is essential for redefining success within educational institutions and creating environments where students can explore their passions and develop their unique capabilities.



FIGURE 1.5 The Montessori method connects learning deeply with the environment.

However, this shift is challenging within conventional classroom settings, which often lack the space or opportunities for connections with oneself, others, and the environment—crucial for developing self-awareness and emotional intelligence. The focus on uniform learning and assessment methods overlooks individual learning styles and needs, restricting students' ability to self-discover or pursue their interests. This stifles the development of self-knowledge and diminishes personal fulfillment. Additionally, the typical classroom layout, with students arranged in rows facing the teacher, minimizes meaningful peer interaction, stifling collaborative learning and limiting the development of communication and interpersonal skills.

Traditional learning systems prioritize the transmission of information over the construction of knowledge through social interaction, undermining the potential to foster a sense of community and mutual support among learners. Furthermore, conventional education often confines learning to classroom walls, detaching students from real-world contexts where their knowledge could be applied. This separation leads to disengagement and obscures the relevance of education to the outside world. Limited exposure to both natural settings and the broader community restricts opportunities for experiential learning, which is essential for understanding ecological and social systems.

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"Education is not preparation for life; education is life itself"

—John Dewey

#### INTRODUCTION

This leads us to another crucial disconnect that needs to be addressed: the vital connection between learning systems and learning spaces. Despite numerous efforts in recent years to reform education, changes have often been piecemeal and isolated, preventing revolutionary progress. Revolutionary change in education is hindered because all parts of the learning ecosystem are treated separately rather than holistically. *To achieve meaningful and sustained transformation, all the vital parts of an education system—including learning spaces and learning systems—must work in coherence.* 

The focus is on beginning with the end in mind, emphasizing the importance of guiding the design of cohesive educational environments. The "Portrait of a Learner" model integrates various elements of education to nurture students to be their most fulfilled, humane selves. This approach aims to create an integrated and revolutionary education system, designed from the ground up with all the pieces of the educational puzzle in mind, including the learning spaces.

# Part 1: Building Minds

The first part of this book, "Building Minds," advocates for a transformative approach to education that includes the creation of vibrant spaces that foster connection and engagement. This approach includes designing adaptable learning spaces that cater to diverse needs, integrating natural and built elements to enhance well-being, promoting critical thinking and creativity, facilitating collaboration and empathy, incorporating real-world applications and technology, and supporting emotional and social intelligence. Inspired by Mihaly Csikszentmihalyi's concept of flow, these spaces aim to facilitate deep immersion and joy in learning. *Central to this part is the idea that learning spaces must facilitate connections on multiple levels to truly "build minds," thereby nurturing intellectual, emotional, and social growth and preparing students for the future.* 

# Part 2: Cultivating Coherence

The second part of this book, "Cultivating Coherence," addresses the often-overlooked connection between learning systems and learning spaces. This alignment ensures that all parts of the learning ecosystem work together harmoniously. By designing coherent learning environments, we can create educational experiences that empower learners to thrive academically, socially, and personally. This integrated approach ensures that education is a cohesive experience, preparing learners for an interconnected world. The central idea of "becoming human" is explored here, emphasizing the holistic development of individuals through coherent educational practices. Revolutionary change in education is hindered because all parts of the learning ecosystem are treated separately rather than holistically.

# PART ONE CRAFTING CONNECTIONS





# THE PARADOX OF DISCONNECTION

# 1.1 Human Connection at Birth

The journey of human life begins with an essential, profound connection. From conception, we are intricately linked to another human being—our mother. This connection is both biological, through the umbilical cord that nourishes and sustains us, and emotional, as we develop in the enveloping warmth of the womb.



**FIGURE 1.1** The word "connection" is at the very heart of our human existence. The foundations for our need to be connected to others are built well before birth.

These initial human connections lay the foundational understanding that to be human is to be connected. The innate need for connection is fundamental to our very survival and growth as human beings. Psychological research underscores the importance of the earliest bonds we make during childhood, indicating that these initial emotional and physical connections are crucial for developing trust and security, which influence our interactions with others throughout our lives.

# 1.2 The Paradox of Modern Disconnection

In stark contrast to these beginnings, and despite the array of technologies designed to keep us all connected, today's world is characterized by a pervasive sense of disconnection. This paradox continues to deepen with technological advancements ostensibly designed to enhance connectivity. That is because technology allows for communication across vast distances in mere seconds, but it often fails to provide the depth and fulfillment inherent in direct human interactions. This disconnection manifests across several dimensions.



**FIGURE 1.2** The virtual world brings our children into contact with dozens or even hundreds of other people. These connections can feel very real. Unfortunately, every moment spent in front of a screen is a moment not spent developing the deep and fulfilling connections that only happen through direct, spontaneous in-person interaction.

Despite the array of technologies designed to keep us all connected, today's world is characterized by a pervasive sense of disconnection.

# 1.3 Disconnect from Self

# 1.3.1 What Does it Mean to Disconnect from Self?

Disconnecting from self refers to losing touch with one's internal thoughts, feelings, and values. This occurs when individuals prioritize external validation over self-awareness and personal fulfillment. Disconnection manifests in several critical ways:

**Lack of Introspection:** A decline in personal reflection and self-awareness as external pressures and digital distractions dominate one's daily life. This results in a diminished capacity to understand one's own needs, desires, and emotions.

**Emotional Disengagement:** Reduced emotional engagement leads to an inability to manage personal emotions effectively, impacting overall mental health and resilience. Individuals may feel detached from their emotional responses and struggle to process or express feelings adequately.



**FIGURE 1.3** Reduced emotional engagement leads to an inability to manage personal emotions effectively.

**Compromised Identity Formation:** As individuals neglect their inner self, their sense of personal identity becomes shallow or overly dependent on societal expectations and norms. This often results in a conformist attitude where external factors heavily influence personal choices rather than genuine personal preferences.

emotional engagement leads to an inability to manage personal emotions effectively, impacting overall mental health and resilience.

Reduced

# 1.3.2. The Consequences of Disconnect from Self

**Mental Health and Reduced Emotional Resilience:** The rising incidences of mental health disorders, such as depression and anxiety are closely linked to a disconnect from self. This disconnection contributes to existential angst and reduces emotional resilience, making it difficult for individuals to engage meaningfully with their inner lives. The lack of a deep personal connection complicates navigating life's setbacks and can perpetuate a cycle of chronic stress and emotional instability.

**Relationship Challenges:** Impairment in forming and maintaining healthy relationships stems from a disconnect from self. A poor understanding of one's own emotions leads to diminished empathy and meaningful interactions, causing conflicts and dissatisfaction within personal and professional relationships.

**Low Self-Esteem:** A disconnect from self often results in low self-esteem. Individuals may feel inadequate and continuously seek external validation, which can be exacerbated by the pressure to conform to societal or educational standards.

As individuals neglect their inner self, their sense of personal identity becomes shallow or overly dependent on societal expectations and norms.



**FIGURE 1.4** Disconnecting from oneself often leads to low self-esteem and increased susceptibility to peer pressure.

**Susceptibility to Peer Pressure:** The need for acceptance and fear of rejection can make individuals more susceptible to peer pressure, compromising their authentic self-expression and decision-making abilities.

**Consumerism and Workplace Impact:** Society's focus on materialism and external achievements drives individuals away from self-discovery, leading to consumerism and a lack of genuine self-expression in the school or workplace. This results in decreased engagement in school and college, poor job satisfaction, and reduced productivity.



Society's focus on materialism and external achievements drives individuals away from self-discovery.

**FIGURE 1.5** Disconnection from oneself contributes to a pervasive sense of dissatisfaction and malaise.

**General State of Unhappiness and Malaise:** Overall, societal disconnection from self contributes to a pervasive sense of dissatisfaction and malaise. Despite high levels of technological advancement and comfort, many feel something fundamental is missing, leading to a continuous and often futile search for more fulfilling experiences.

**Direct Effects on Physical Health:** The stress and anxiety resulting from a disconnect from self can have direct physiological effects, increasing the risk of health issues such as heart disease, insomnia, and chronic fatigue, further complicating the cycle of disconnection.

# SYSTEMIC EDUCATIONAL DESIGN

# 1.3.3 How Do School Environments Play a Crucial Role in Deepening Students' Disconnection from Self?

**Standardized Curriculum and Assessment:** The educational system's reliance on standardized curricula and assessment methods fosters conformity, deterring students from exploring and appreciating their unique strengths and interests. This uniform approach stifles creativity and personal engagement, which are essential for developing critical thinking and reflective capacities.

**Focus on Rote Learning:** Curricula that emphasize rote memorization and test performance fail to incorporate diverse content or cater to individual student interests, leading to diminished engagement and fostering disconnection from academic and personal development. This idea is further elaborated in Chapter 7.

# **Disconnects of Modern Schooling**



**FIGURE 1.6** Over time, schooling has become a more entrenched and self-perpetuating system that has lost touch with the real needs of its most important clients—children. The above list shows how the many elements that make up modern school systems contribute to deepening students' disconnection from self.

# **PHYSICAL DESIGN OF SCHOOLS**

**Uniform Classrooms:** Schools often feature stark, uniform classrooms prioritizing order and compliance over creativity and individual expression. This environment can alienate students from their intrinsic curiosity and self-directed learning instincts, which are crucial for emotional growth and personal connection.





**FIGURE 1.7 and FIGURE 1.8** Most classrooms, to this day, remain faithful to the design and function of the original classrooms of the industrial era. Their goal was to create a generation of "lettered" but not necessarily "learned" individuals fit to work in factories. Today's rhetoric of wanting students to realize their full potential is in direct conflict with classroom-based learning that, almost by design, limits creativity, collaboration, and critical thinking—all essential skills for success in a fast-changing world.

**Rigid Seating and Room Layouts:** Fixed seating arrangements and standardized room setups in conventional schools restrict movement and limit personal space, leaving little room for autonomy. This rigidity not only hampers spontaneous social interactions and collaborative learning but also deepens children's disconnection from their inner selves. The lack of flexibility in the environment prevents opportunities for self-reflection and deep work, essential for personal growth and self-connection.

The lack of flexibility in the environment prevents opportunities for self-reflection and deep work, essential for personal growth and selfconnection.



**FIGURE 1.9** When was the last time anyone saw a traditional classroom set up in a way that would allow individual students to get away to think, reflect, and synthesize all their formal learning? The reality is that school environments in general, and classrooms in particular, have never been about child development but about management and control.

# **IMPACT ON STUDENT DEVELOPMENT**

**Loss of Individuality:** Focusing on conformity in educational settings often strips students of their unique identities, making their educational journey more about meeting external standards than fostering personal growth.

**Reduced Emotional Engagement:** Limited opportunities for students to express their emotions or engage in emotional intelligence learning hinder personal development and increase the risk of mental health issues.

**Suppression of Natural Curiosity:** The restrictive nature of many educational systems stifles the natural curiosity essential for comprehensive learning and deep personal connections, limiting students' ability to understand their environment and their role within it deeply.

#### **TABLE 1.1** School Design Aspects Contributing to Disconnection from Self

Aspect of School Design	Impact on Disconnect from Self
Uniform Classrooms	Uniform, stark classrooms with minimal personalization lead to a lack of self-expression among students, stifling their personal identity and creativity.
Rigid Seating Arrangements	Fixed seating arrangements prevent flexibility and movement, discouraging autonomy and personal engagement in learning activities.
Limited Exposure to Nature	The lack of natural elements in the school environment can decrease students' connection to themselves through reduced interactions with environments that promote calm and introspection.
Standardized Testing Focus	Emphasis on standardized testing over diverse assessment methods can reduce students' opportunities to explore their strengths in different contexts, limiting self-knowledge and confidence.
Minimal Artistic Expression	Schools with limited facilities for art, music, and creative expression prevent students from exploring diverse aspects of their personalities and reduce the development of emotional intelligence.
Surveillance and Monitoring	Excessive monitoring and surveillance within school premises can create an environment of mistrust, reducing students' comfort with exploring their individualities and expressing themselves freely.
Rigid Scheduling	Natural learning rhythms are disrupted with rigid scheduling, preventing deep engagement and the development of flow in activities.
Limited Personal Space	Alone time, crucial for reflection and personal growth, is restricted with limited personal space, hindering self-awareness and emotional intelligence.
Lack of Diverse Learning Environments	Individual scholarship cannot flourish in a lack of diverse learning environments, which, in turn, will alienate students who do not fit the conventional learning mold.
Inadequate Emotional Support Spaces	Emotional expression and management that are vital for healthy psychological development can be stifled with inadequate emotional support space.

# 1.4 Disconnect from Others

#### 1.4.1 What Does it Mean to Disconnect from Others?

Disconnecting from others involves a reduction in meaningful interpersonal relationships and a sense of community. Superficial interactions and a lack of deep, empathetic connections characterize this type of disconnection. Following are some consequences of the disconnect from others:

**Superficial Interactions:** Increasing reliance on digital communication platforms offers convenience but often fails to provide depth in interactions, leading to relationships that lack emotional and psychological intimacy.



**FIGURE 1.10** With the advent of the digital era, computer literacy and, later, overall digital literacy became essential elements of the modern school curriculum. However, as digital devices became more sophisticated, they also became more alluring to young minds. Gone are the days when boredom was a common experience of growing up. Today, despite brain-based research that shows the advantages and, indeed, the necessity of downtime for boredom, children are constantly stimulated in their virtual worlds. The superficiality of these worlds in which children live militates against them in forming deep and meaningful relationships in their personal lives.

**Diminished Empathy:** As genuine face-to-face interactions are replaced with brief and impersonal exchanges, the ability to empathize with others significantly decreases. This lack of empathy makes it difficult to understand or share others' feelings, contributing to social fragmentation.

**Weakening Social Cohesion:** As individuals feel less connected to each other, the fabric of community and collective identity weakens. This results in reduced participation in communal activities, less support within social networks, and a general decline in social cohesion and mutual support.

**Psychological and Health Implications:** As genuine connections dwindle, loneliness and social isolation have escalated to major public health issues, strongly linked to an array of mental health problems, including depression and anxiety. Research shows that chronic loneliness impairs immune function, increases inflammation, and is linked to numerous health issues, including heart disease and stroke. John Cacioppo's research highlights that "social isolation has an impact on health comparable to the effect of high blood pressure, lack of exercise, obesity, or smoking."

Social isolation has an impact on health comparable to the effect of high blood pressure, lack of exercise, obesity, or smoking.



FIGURE 1.11 Social isolation can lead to an array of mental health issues.

# 1.4.2. How Do School Environments Play a Crucial Role in Deepening the Disconnection from Others?



**FIGURE 1.12** A school's physical design is just one element in a larger system of schooling that disconnects students from each other.

**Systemic and Physical Educational Design:** The educational system often promotes standardized curricula and assessment methods, encouraging a one-size-fits-all approach that overlooks the importance of social diversity and individual learning preferences. This emphasis not only discourages cooperative learning but also fosters a competitive atmosphere, alienating students from one another. Complementing this, traditional school layouts with uniform classrooms and rigid seating arrangements prioritize efficiency over engagement. Such physical environments stifle spontaneous social interactions and limit opportunities for students to develop essential interpersonal skills.

**Impact of Traditional Classroom Layouts:** The setup of conventional learning spaces, with students seated in rows facing forward, minimizes the potential for face-to-face communication among peers. This arrangement restricts direct dialogue and eye contact, which are crucial for establishing rapport and fostering empathy. Reduced face-to-face interactions can decrease the release of oxytocin, a hormone important for social bonding, thereby diminishing the quality of social connections formed in the classroom.

**Consequences for Community Building and Individual Identity:** By emphasizing competition over collaboration, educational environments not only hinder the formation of meaningful relationships but also undermine the sense of community among students. This focus on competition leads to isolation and reduces opportunities for students to develop empathy and mutual support, critically impacting their ability to navigate social relationships effectively and form a cohesive community identity.

**Emphasis on Cognitive Skills Before Social-Emotional Learning:** A critical issue in school environments is the emphasis on developing cognitive skills, such as reading and writing, before children have adequately developed social-emotional skills. This approach can hinder the natural progression of interpersonal connections and emotional intelligence. Research has shown that early development of social-emotional skills is crucial for children's overall success. Studies indicate that prioritizing social-emotional learning (SEL) in the early stages of education leads to better academic outcomes, improved behavior, and enhanced emotional intelligence. For children to form meaningful relationships and thrive socially, the environment must first facilitate connection and collaboration. Schools should create safe and supportive learning environments that prioritize SEL, laying the foundation for empathy, communication, and teamwork, which are essential for both personal and academic success.

By emphasizing competition over collaboration, educational environments not only hinder the formation of meaningful relationships but also undermine the sense of community among students.

5	7 5
Aspect of School Design	Impact on Disconnect from Others
Structured Social Interactions	Uniform, stark classrooms with minimal personalization lead to a lack of self- expression among students, stifling their personal identity and creativity.
Competitive Atmospheres	Fixed seating arrangements prevent flexibility and movement, discouraging autonomy and personal engagement in learning activities.
Lack of Communal Spaces	The lack of natural elements in the school environment can decrease students' connection to themselves through reduced interactions with environments that promote calm and introspection.
Limited Group Learning Areas	Emphasis on standardized testing over diverse assessment methods can reduce students' opportunities to explore their strengths in different contexts, limiting self-knowledge and confidence.
Inflexible Classroom and Its Layout	Schools with limited facilities for art, music, and creative expression prevent students from exploring diverse aspects of their personalities and reduce the development of emotional intelligence.
Digital Overreliance	Excessive monitoring and surveillance within school premises can create an environment of mistrust, reducing students' comfort with exploring their individualities and expressing themselves freely.
Minimal Interaction with Surrounding Community	"With the lack of interdisciplinary learning, natural learning rhythms are disrupted, preventing deep engagement and the development of flow in activities.

#### TABLE 1.2 School Design Aspects Contributing to Social Disconnection

Lack of Interdisciplinary Learning Insufficient areas for alone time, which is crucial for reflection or personal growth, hinder self-awareness and emotional intelligence.

# 1.5 Disconnect from the Environment

Disconnecting from the environment refers to the increasing lack of awareness and interaction individuals have with both natural and built surroundings. This disconnection is driven by urbanization, technological advancements, lack of awareness, and lifestyle changes that prioritize indoor activities. While the reduced interaction with the natural environment is a significant aspect, disconnection from the built environment also plays a crucial role.

# 1.5.1 Disconnection from the Natural Environment

Disconnecting from the natural environment refers to the increasing separation between individuals and natural settings due to urbanization, technology, and indoor-focused lifestyles. This disconnection includes,

a. Loss of Direct Interaction: Reduced physical contact with nature means fewer opportunities for physical activity and sensory engagement in natural settings. People experience less of the textures, sounds, and sights that only diverse ecosystems can provide.



**FIGURE 1.13** It is no surprise that most schools provide few opportunities for students to connect to the natural environment. That is because communing with nature is rarely seen as an "essential" element of human development, even though all the research says the exact opposite. Human beings, especially children, are hardwired to thrive socially, emotionally, and even academically in natural settings.

b. **Cognitive and Sensory Deprivation:** Natural environments are vital for cognitive development and sensory stimulation. Disconnection from nature leads to a deprivation of these essential experiences, which enhance focus, problem-solving abilities, and overall mental acuity.

c. **Diminished Ecological Consciousness:** Individuals may develop less concern for environmental issues without regular interactions with nature. This detachment affects not only personal lifestyle choices but also broader attitudes toward environmental policy and conservation efforts.

d. **Emotional and Psychological Impact:** Nature has restorative psychological effects that urban environments cannot replicate. Disconnecting from nature can increase stress, anxiety, and feelings of confinement while reducing opportunities for mental restoration that natural settings provide.

# How Do School Environments Play a Crucial Role in Deepening the Disconnection from the Natural Environment?

**Systemic Neglect of Outdoor Education:** Many schools overlook the importance of outdoor education in their curricula, thus failing to provide crucial opportunities for students to engage with the natural environment through practical learning experiences. This lack of outdoor educational focus stunts the development of a deep appreciation and understanding of ecological systems.

**Physical Design Limitations:** The architectural design of many educational facilities does not facilitate sufficient interaction with natural elements, lacking green spaces and diverse ecosystems. Most designs do not take advantage of nature views from indoors, which is one of the simplest ways of connecting with diurnal rhythms. This deficiency hinders the benefits of nature exposure, as emphasized in studies such as Richard Louv's *Last Child in the Woods*, which discusses the implications of what he terms "Nature Deficit Disorder."



**FIGURE 1.14** Tens of thousands of classrooms around the world are designed with no windows. It is not uncommon to hear the rationalization that these classrooms are good for children who may otherwise be distracted by outdoor views.



**FIGURE 1.15** Even when there are lots of windows, in many schools they are either closed off with blinds or covered with paper for the same reason—to prevent students from being distracted.

Excessive use of technology in education reduces the amount of time available to students to spend outdoors.



**FIGURE 1.16** Contrast the prior two images with this one of Anne Frank Inspire Academy in San Antonio, TX. Here, both daylight and nature views are recognized and welcomed for their value as essential elements of a good learning environment.

**Overemphasis on Technology:** Excessive use of technology in education reduces the amount of time available to students to spend outdoors. This diminishes opportunities for direct environmental education and reduces physical activity, which is vital for health. Activities in natural settings, proven to enhance focus and creativity, are curtailed, affecting overall health and developmental outcomes.

A lack of foundational environmental engagement can lead to long-term neglect of ecological stewardship and ongoing health issues related to inactive lifestyles.

Interaction with spaces that lack physical comfort and adaptability can lead to discomfort and disengagement.

# 1.5.2 Disconnection from the Built Environment

Disconnection from the built environment refers to the lack of interaction with well-designed, ergonomic, sensory-rich spaces supporting human activities and well-being supporting human activities below:

**Deprivation of Optimal Lighting, Acoustics, and Thermal Comfort:** Inadequate lighting, poor acoustics, and insufficient climate control create environments that hinder learning and well-being.

**Loss of Ergonomic and Flexible Design:** Interaction with spaces that lack physical comfort and adaptability can lead to discomfort and disengagement. The absence of flexible design limits support for various activities and needs.

**Diminished Psychological Freedom:** Lack of control over one's immediate environment, such as the inability to adjust lighting or rearrange furniture, reduces psychological freedom and a sense of belonging, negatively impacting well-being and productivity.

**Absence of Thoughtful Sensory Stimuli:** Built environments often lack diverse sensory stimuli such as varying textures, colors, and sounds, leading to feelings of disconnection and discomfort due to sensory deprivation.

# How Do School Environments Play a Crucial Role in Deepening the Disconnect from the Built Environment?

**Physical Design Limitations:** Many educational facilities lack ergonomic furniture, adequate lighting, and flexible spaces that accommodate different learning styles and activities. This deficiency hinders the benefits of well-designed environments, as emphasized in studies on the impact of classroom design on student outcomes.

**Overemphasis on Standardization:** Standardized classroom designs often do not consider students' diverse needs, leading to a lack of personalized and flexible learning spaces. This standardization can limit students' engagement and comfort, impacting their overall educational experience.

**Absence of Thoughtful Sensory Stimuli:** Many school environments fail to incorporate sensory-rich elements such as varied textures, natural light, and acoustics that enhance learning and well-being. This lack of sensory engagement can make school environments feel sterile and uninviting

Lack of sensory engagement can make school environments feel sterile and uninviting.



**FIGURE 1.17** The lack of sensory engagement makes most school environments feel sterile and uninviting. The problem is further exacerbated by the arrangement of fixed furniture and equipment that limit children's movement. This is what the computer lab at Hillel Academy in Tampa looked like before the school decided to eliminate it.



**FIGURE 1.18** This is the same space previously occupied by the defunct computer lab (see Figure 1.17) at Hillel Academy after a low-cost summer renovation. The dramatic improvement in the quality of the space is obvious as one that allows students to better connect with themselves, their peers, and their environment.

This ironic modern disconnection calls for a critical examination and restructuring of how we interact with technology, each other, and our environment. To address these challenges, designing educational and social systems that prioritize and nurture the essential connections that define and sustain human life is imperative.

As we conclude our exploration of the paradox of disconnection, we find ourselves at a critical juncture. The profound disconnections from self, others, and the environment that permeates modern educational systems call for more than mere recognition—they demand transformative action. The next sections of our book unveil how intentional design can mitigate these disconnects and enrich the educational landscape by fostering deep, meaningful connections. The profound disconnections from self, others, and the environment that permeates modern educational systems call for more than mere recognition—they demand transformative action.

Aspect of School Design	Impact on Disconnect from the Environment
Limited Access to Outdoor Spaces	Predominantly indoor-centric learning and limited direct access to outdoor spaces reduce students' exposure to and engagement with the natural world. This includes a lack of biophilic design elements that facilitate a seamless transition between indoor and outdoor environments.
Limited Hands-on Interaction with Nature	The absence of a curriculum that integrates outdoor learning experiences restricts students' direct engagement with nature, which is crucial for developing an understanding of and respect for natural systems.
Overuse of Artificial Materials	Extensive use of synthetic materials in construction and furnishing can diminish students' tactile experiences with natural materials, further detaching them from natural textures and elements.
Windowless Rooms and Lack of Nature Views	Learning spaces without windows deprive students of natural light and views of the outside, reducing their daily connection to the natural environment and its rhythms.
Lack of Biophilic Design	The lack of biophilic elements within interior design—such as living walls, natural materials, water features, and color schemes derived from natural settings—limits the psychological and physiological benefits associated with close contact with nature.
Lack of Ergonomic and Flexible Design	The lack of ergonomic furniture and flexible spaces that accommodate different learning styles and activities can impair physical comfort and engagement. This deficiency impacts overall well-being and productivity.
Lack of Indoor Environmental Quality	Poor indoor environmental quality, including inadequate lighting, acoustics, and thermal comfort, can reduce students' cognitive function, mood, and productivity.

# TABLE 1.3 School Design Aspects Contributing to Disconnection from the Environment

# CHAPTER 2

# THE ROOTS OF HUMAN CONNECTION

# 2.1 The Magic of Sensory Connections

Imagine a bustling school playground on a sunny morning. Children laugh, shout, and chase each other, their senses alive and engaged. One child, let's call her Mia, stands at the edge of the playground, her eyes wide with wonder as she takes in the subtle colors of her surroundings. The redwood slide, colorful play structures, the green grass, and the yellow sunshine all stimulate her visual senses, helping her feel connected to the world around her.

Humans, like Mia, are equipped with intricate sensory systems that allow us to navigate and interpret our environment. Each sense—sight, sound, touch, taste, smell, body awareness, and intuition—plays a crucial role in how we gather information and respond to our surroundings.



**FIGURE 2.1** Properly designed outdoor play and recreational areas provide a wealth of positive, life-affirming, healthy stimuli. Beyond the obvious health benefits of being active and breathing fresh air, outdoor spaces stimulate all the senses in ways that very few indoor settings can.

# **SIGHT: The Gateway to Visual Connections**

Think of a time when you were mesmerized by a beautiful sunset or captivated by a stunning piece

# CHAPTER 2. THE ROOTS OF HUMAN CONNECTION

of art. Our visual system lets us perceive and differentiate light, colors, and shapes. This sensory input is critical for most daily activities and social interactions. For instance, Mia's ability to see her friends' smiling faces or read the body language of a new teacher helps her feel connected and understood.

All schools should design their primary learning spaces such as classrooms, labs, and learning commons with large windows to let in ample natural light. Students who struggle with attention issues will find their focus improves significantly in these bright, airy spaces. Teachers will also notice that such children are more engaged and less anxious, highlighting the power of visual stimuli in learning environments.

**STRATEGY:** School architects should prioritize natural lighting in their designs. Large windows, skylights, and light wells can create bright, welcoming spaces that enhance mood and cognitive function. Additionally, using calming colors and pastel shades can create a serene learning environment.



**FIGURE 2.2** Here is an example of an environment that is suitable for a variety of activities from casual reading and independent study to team collaboration that is vastly enhanced by its use of color and lighting and access to an abundance of daylight. No matter how students are learning here, their psychology and physiology are both positively impacted by such spaces.

# **SOUND: The Melody of Communication**

Hearing is vital for communication. Remember a moment when a loved one's voice comforted you or a favorite song lifted your spirits? Sounds convey a wealth of information—tone, pitch, and volume—which are integral to understanding emotions and intentions. For Mia, the joyful sounds of her friends playing invite her to join in, creating a sense of belonging.

Oftentimes, school architects put up walls to control noise, but unhealthy noise levels have nothing

# CHAPTER 2. THE ROOTS OF HUMAN CONNECTION

to do with walls but, rather, with the acoustic design of a particular space. Good acoustics in primary learning areas require an adequate number of sound absorption surfaces. These can be introduced by way of carpeted floors, acoustic wall and ceiling panels, and soft seating. This kind of design is more aesthetic and reduces noise levels to create a calmer atmosphere, allowing students to concentrate better regardless of whether they are working alone or in small groups. Teachers also find that lower noise levels in well-designed spaces reduce their stress and make them more effective in their interactions with students.

**STRATEGY:** Integrate sound-absorbing materials in learning areas to minimize noise pollution. Soft background music or nature sounds can be played in social spaces and student cafés to enhance student engagement. Encouraging the use of calm, clear communication helps create a harmonious environment in all parts of the school.



**FIGURE 2.3** Notice how a relatively compact space comfortably permits a variety of learning and social activities. Spaces like this can function effectively to accommodate many students without walls because of the various acoustic interventions such as a sound-absorbing carpet, soft seating, and ample numbers of acoustic panels in the ceiling.

# **TOUCH: The Language of Comfort**

Touch is a direct means of interaction. Think of the comfort of a hug or the reassurance of a handshake. Touch provides essential information about our environment and is fundamental to human bonding. Mia feels secure when she holds her teacher's hand, knowing she is safe and cared for. That said, we think of the sense purely as the sensation of touching another person or animal. However, any tactile experience stimulates the sense of touch.
# CHAPTER 2. THE ROOTS OF HUMAN CONNECTION

In many schools around the world and, especially in Montessori programs, children are encouraged to engage in hands-on activities like gardening and building. Children who have difficulty expressing themselves verbally find solace in these tactile experiences. Through touch, children develop better motor skills and emotional regulation, illustrating the importance of tactile stimuli in learning.

**STRATEGY:** Incorporate tactile activities into the curriculum. Schools should have spaces for hands-on learning, like gardens, craft areas, and maker labs. Ergonomic furniture and comfortable materials in classrooms and other learning areas can also enhance students' tactile experiences.



**FIGURE 2.4** Create as many opportunities as possible for children to have tactile (high-touch) experiences indoors and outdoors. An outdoor chessboard like the one featured here is a good example of a tactile experience that can also be playful, collaborative, and creative.

#### **TASTE AND SMELL: The Flavor of Memories**

Taste and smell are closely linked and crucial for enjoying food and detecting potential dangers. They also evoke memories and emotions, influencing our mood and connections. Imagine Mia's delight when she smells her favorite cookies baking, reminding her of home and family.

Schools can experiment with the idea of a sensory garden where children can explore various plants and herbs. At one such garden in a school we designed in India, a 14-year-old student named Priya was captivated by the scent of curry leaves, reminding her of her grandmother's cooking. This olfactory connection not only brought comfort but also sparked Priya's interest in botany, a subject that she had not had much interest in before.

STRATEGY: Create sensory gardens and culinary programs in schools. Allow students to engage

with different scents and tastes that can enhance their learning experiences and emotional well-being. Encourage activities like cooking classes to integrate taste and smell into education.



**FIGURE 2.5** From an early age, children need to learn the origins of healthy foods. Gardens that have a mix of herbs, vegetables, and flowers will provide a full sensory experience for the students working in them.



**FIGURE 2.6** The cycle of learning about nutrition and health is complete when food grown in the school garden is used in the teaching kitchen. Children who grow their own food are far more likely to eat more fruits and vegetables and develop good eating habits that will stay with them their whole lives.

#### **PROPRIOCEPTION: The Sense of Self in Space**

Proprioception, or body awareness, is our ability to sense our position and movement in space. It's why Mia can confidently balance on a beam or climb a tree without looking at her feet. This sense is essential for physical development and interaction with the environment.

Proprioception skills can be improved when schools create outdoor areas where students can participate in activities like climbing and balancing. Even students who are initially hesitant to join will gain confidence as they improve their proprioceptive skills. These activities not only boost their physical abilities but also their self-esteem and social connections.

**STRATEGY:** Design school spaces that encourage physical activity and exploration. Outdoor play areas, climbing structures, and balance beams help develop proprioception. Even in urban or high-rise schools where students are unable to be out often, incorporate movement-based learning indoors to engage students physically and cognitively.





FIGURE 2.7 and FIGURE 2.8 Through clever design, even small indoor areas in urban, high-rise schools can be converted to serve as places for active play as these images from an upper floor early childhood center at Col.legi Montserrat in Barcelona demonstrate.

#### **INTUITION: The Inner Guide**

Intuition involves a deeper, subconscious processing of information that guides our judgments and decisions. It's the gut feeling that tells Mia whether a situation feels right or wrong, helping her navigate social interactions and complex situations.

Project-based learning is a good format for creating somewhat generic assignments without expected fixed outcomes where students can be encouraged to follow their instincts during group projects. These kinds of open-ended assignments allow students to get in touch with their natural leadership and problem-solving skills and demonstrate the value of intuitive learning.

**STRATEGY:** Foster environments where students can trust and develop their intuition. Encourage independent and project-based learning that allows students to explore and make decisions. Create a supportive atmosphere where students feel safe to express and act on their instincts.

# 2.2 The Brain's Role in Making Connections

Once our senses gather information, it is transmitted to the brain where a fascinating process unfolds. Picture a grand central station where all sensory data converges. The cerebral cortex interprets these inputs based on past experiences and contextual cues, while the limbic system processes emotional content.

One day, Mia feels anxious about an upcoming test. Her brain's amygdala, which detects emotional stimuli, reacts to her fear. However, when her teacher reassures her with a kind word, her brain releases dopamine, a neurotransmitter that enhances feelings of pleasure and satisfaction, encouraging her to approach the test with confidence.

A good way to reduce stress in schools is for mindfulness practices to be integrated into the daily routine. Students like Mia can practice deep breathing and meditation before exams, reducing anxiety and enhancing focus. This approach helps regulate the amygdala's response to stress, illustrating the importance of emotional support in education.

**STRATEGY:** Incorporate mindfulness and stress-reduction techniques into the school day. Create calming spaces where students can practice meditation or deep breathing. Provide training for teachers to help them support students emotionally.

Similarly, when Mia plays with her friends, her brain releases oxytocin during their social bonding activities, strengthening feelings of trust and connection. These neurochemicals create a feedback loop, shaping Mia's immediate responses and long-term behaviors.

Students should also participate in team-building activities that foster social bonds. Group projects and sports enhance trust and cooperation between students and illustrate how social interactions and oxytocin release contribute to a supportive school culture.

# CHAPTER 2. THE ROOTS OF HUMAN CONNECTION



**FIGURE 2.9** There has never been a time more imperative than now for children to practice mindfulness and other activities that take them away from their digital devices and connect them once again to themselves, to their friends and family, and to the natural world around them.

# 2.3 Conclusion: Nurturing Connections for Holistic Growth

Each student's journey through his or her sensory world, discussed in this chapter, illustrates the profound impact of sensory experiences on human connection. By understanding and engaging with our environment through our senses, we learn, adapt, and form meaningful relationships.

Creating supportive and emotionally rich environments is crucial for children's development. These spaces should be designed to harness sensory stimuli that promote positive neurobiological responses, enhancing well-being and the capacity for healthy connections.

The holistic design of the learning environment will include elements like sensory gardens, ergonomic classrooms, and spaces for mindfulness. Students thrive in these environments, demonstrating improved academic performance and emotional well-being.

**STRATEGY:** School architects and curriculum designers should work together to create environments that support sensory engagement and emotional well-being. Incorporate natural elements, ergonomic design, and mindfulness practices into the school culture. By doing so, we can foster environments where children can thrive, build strong connections, and develop holistically.

In the next chapters, we will explore practical strategies to optimize educational and social environments, fostering deeper, more meaningful connections with ourselves, others, and the world around us. Through these efforts, we can prepare children to navigate and thrive in an increasingly complex world.



# CONNECTION WITH SELF

We all know or have known curious and spirited young children who dread going to school. Each day feels like a rush to them, with classes that seem to blend into one another without meaning or purpose. Many struggle academically and feel increasingly disconnected from their peers and themselves. Even when teachers notice their declining grades and waning enthusiasm, they often cannot pinpoint the root of the problem. Unfortunately, this is a familiar story for many children. One of the reasons for this not-so-good picture of so many school-going children is that most schools limit a child's possibilities to connect with their inner self.

To address this problem, let's understand what it means to connect with the self and how schools can enhance this connection.

# 3.1 The Essence of Connection with Self

#### 3.1.1 Defining Connection with Self

Connecting with oneself involves a journey into our inner world—our emotions, desires, thoughts, and values. This self-awareness shapes our identity and influences our interactions with the world. In educational environments, nurturing this connection can transform a child's learning experience, enhancing motivation, emotional regulation, and cognitive functions like attention, memory, and problem-solving.

#### 3.1.2 Importance in Education

Imagine an educational environment where children not only absorb information but also deeply connect with their inner selves. This connection helps them recognize their strengths and areas for growth, set meaningful goals, manage stress, and stay motivated. Children who are in tune with themselves become more resilient and adaptive learners, capable of confidently navigating life's complexities.

Creating such environments requires a thoughtful design approach that considers children's physical, emotional, and psychological needs. Spaces should be flexible, inclusive, and supportive of self-directed learning. Research by neuroarchitects and educational designers suggests that well-designed learning environments can significantly enhance a child's ability to connect with themselves and others. Connecting with oneself involves a journey into our inner world—our emotions, desires, thoughts, and values.

# **3.2 Emotional and Motivational Aspects**

#### 3.2.1 Emotional Regulation

A well-developed sense of self enables children to navigate their emotions with confidence. This self-awareness is crucial for maintaining focus and engagement in learning activities. Emotional regulation, stemming from self-connection, helps manage a range of emotions—from anxiety and excitement to frustration and boredom—that significantly impact cognitive performance. Emotional regulation, stemming from selfconnection, helps manage a range of emotions.

#### TABLE 3.1 Strategies for Emotional Regulation

Strategy	Description	Spatial Elements
Mindfulness practices	Deep breathing, meditation, muscle relaxation	Quiet rooms, flexible lighting
Journaling	Expressing feelings and reflecting	Personal reflection areas
Emotional literacy	Recognizing and responding to different emotions	Sensory rooms, emotional literacy programs



FIGURE 3.1 Journaling is an effective strategy, allowing children to express their feelings and reflect on their experiences.

#### **Neuroinclusive Considerations**

**Flexible Lighting:** Adjustable lighting will help—to accommodate light sensitivities, promoting a calming environment.



Quiet Corners: Designated areas within larger spaces will provide for low-stimulation retreats.

**FIGURE 3.2** Personal reflection areas can be creatively designed and placed strategically—ideally with ample daylight and views of nature.

Mindfulness practices, such as deep breathing, meditation, and progressive muscle relaxation, can significantly enhance emotional regulation. Studies in neuroscience have shown that mindfulness increases gray matter density in brain regions associated with emotional regulation and self-referential processing. Incorporating quiet rooms with soft lighting and comfortable seating can provide the perfect environment for these practices.

Journaling is another effective strategy, allowing children to express their feelings and reflect on their experiences. Research indicates that expressive writing can reduce stress and improve mental health by helping individuals process and organize their thoughts. Designing personal reflection areas where children can write or draw their thoughts can support this practice.

Emotional literacy programs that teach children about different emotions, how to recognize them, and how to

Mindfulness practices, such as deep breathing, meditation, and progressive muscle relaxation, can significantly enhance emotional regulation.

respond constructively can enhance their emotional intelligence. Child psychology research highlights that emotional literacy is linked to better social interactions and academic performance. Sensory rooms equipped with tactile, visual, and auditory stimulation tools can support these programs, helping children regulate their emotions effectively.

#### 3.2.2 Enhancing Motivation

Intrinsic motivation thrives when individuals feel strongly connected to activities aligning with their personal goals and values. This sustainable motivation leads to continued engagement and success in learning endeavors.

Strategy	Description	Spatial Elements
Autonomy in learning	Encouraging choice and self- directed learning	Adaptable workspaces, personalized areas
Goal setting	Helping children set personal, meaningful goals	Project rooms, interactive stations
Constructive feedback	Thoughtful insights to understand progress and areas for growth	Flexible, supportive learning environments

#### TABLE 3.2 Fostering Intrinsic Motivation

#### **Neuroinclusive Considerations**

**Personalized Learning Areas:** Spaces where children can choose seating and workspace arrangements can increase focus and learning. Autonomy-supportive environments enhance students' intrinsic motivation. Allowing children autonomy in their learning processes can boost intrinsic motivation.

**Interactive Stations:** Stations catering to various sensory modalities, aligning with individual neurological profiles, increase creativity.

Autonomy-supportive environments enhance students' intrinsic motivation, allowing children autonomy in their learning processes can boost intrinsic motivation.

**Research and engagement:** Adaptable workspaces and personalized areas where children can choose how and where they learn can foster a sense of ownership and motivation.

Goal setting is another powerful tool. Helping children set personal, meaningful goals increases their commitment and drive. Studies have shown that goal-setting practices enhance motivation and academic achievement by providing a clear sense of direction and purpose. Project rooms equipped with resources for long-term projects can support goal-setting activities, encouraging sustained focus and effort.

Allowing children autonomy in their learning processes can boost intrinsic motivation.

Constructive feedback, rather than the constant celebration of achievements, helps children understand their progress and areas for growth. This balanced approach builds confidence and a positive self-image without fostering an obsession with success. Flexible and supportive learning environments where children receive thoughtful insights can enhance their intrinsic motivation and resilience.



**FIGURE 3.3** Spaces like this provide the variety that children need. It gives them an opportunity to choose different places depending on what they are doing and who they want to work with.

# 3.3 Cognitive and Neurological Aspects of Connection

#### 3.3.1 Cognitive Benefits and Metacognitive Abilities

Self-awareness enhances cognitive abilities, enabling children to plan, monitor, and assess their learning strategies. This fosters self-directed learning and better management of cognitive processes like attention, memory, and problem-solving. Self-awareness enhances cognitive abilities, enabling children to plan, monitor, and assess their learning strategies.

#### TABLE 3.3 Enhancing Metacognition

Strategy	Description	Spatial Elements
Self-assessment tools	Techniques to assess understanding and progress	Learning zones, personal reflection areas
Reflection periods	Regular intervals for reflective thinking	Quiet nooks, semi-private areas
Metacognitive strategies	Instruction in planning, monitoring, and evaluating learning	Varied learning environments, clear signage

#### **Neuroinclusive Considerations**

Acoustic Treatment: Sound-absorbing materials will help to minimize auditory distractions.

**Clear Signage:** Consistent signage will reduce anxiety and confusion.

Metacognitive abilities, such as planning, monitoring, and assessing learning strategies, are crucial for academic success. Providing children with self-assessment tools and techniques helps them develop strong metacognitive skills. Research indicates that self-assessment promotes metacognitive awareness and improves learning outcomes. Learning zones with resources for self-assessment can support this process.

Incorporating regular reflection periods allows children to think about what they have learned, what worked, and what didn't. Studies show that reflective practices enhance critical thinking and self-regulation. Creating quiet nooks and semi-private areas for reflection can facilitate these practices.

Teaching metacognitive strategies, such as planning, monitoring, and evaluating learning, empowers children to become selfdirected learners. Instruction in metacognitive strategies has been linked to improved problem-solving and academic performance. Designing varied learning environments with clear signage to guide children through their learning process can support these strategies.

#### 3.3.2 Achieving Flow

Flow is a state of deep immersion and joy in activities that perfectly balance challenge and skill. This state fosters peak performance and personal satisfaction.

Flow is a state of deep immersion and joy in activities that perfectly balance challenge and skill. Metacognitive abilities, such as planning, monitoring, and assessing learning strategies, are crucial for academic success.

Strategy	Description	Spatial Elements
Clear goals	Setting attainable goals for direction and focus	Adaptable workspaces, project rooms
Immediate feedback	Providing constructive feedback in real time	Visual cues, breakout spaces
Balanced challenges	Tasks that are appropriately challenging	Structured environments, task- specific areas

# TABLE 3.4 Conditions for Flow

#### **Neuroinclusive Considerations**

Visual Cues: Use visual aids and structured environments to maintain focus.

Breakout Spaces: Spaces for short breaks will prevent overstimulation and maintain flow.

Flow is an optimal learning state where children are deeply immersed in their activities, experiencing joy and satisfaction. To facilitate flow, it is essential to set clear, attainable goals that provide direction and focus. Goal clarity has been shown to facilitate flow experiences by providing direction and focus. Adaptable workspaces and project rooms tailored to various activities support this.

Immediate, constructive feedback keeps children engaged and helps them adjust their strategies in real time. Feedback is essential for maintaining flow as it allows learners to make necessary adjustments and stay engaged. Providing visual cues and breakout spaces for short breaks can help maintain focus and prevent overstimulation.

Tasks that are neither too easy nor too difficult promote a state of flow. Research indicates that tasks at the right difficulty level enhance engagement and the likelihood of experiencing flow. Structured environments with task-specific areas can create the conditions necessary for achieving flow.

#### 3.3.3 Understanding Neuroplasticity

Neuroplasticity refers to the brain's ability to change and reorganize itself by forming new neural connections. This adaptability is influenced by experiences, emotions, and learning processes.

Strategy	Description	Spatial Elements
Varied Learning Experiences	Exposure to different activities	Outdoor learning spaces, activity zones
Mindfulness Practices	Enhancing brain plasticity through mindfulness	Natural light, biophilic design elements
Physical Activity	Supporting brain health through exercise	Movement-friendly design, activity areas

#### TABLE 3.5 Promoting Neuroplasticity

## **Neuroinclusive Considerations**

**Nature Elements:** Incorporating natural elements reduces stress and enhances cognitive function. **Movement-Friendly Design:** Creating spaces that support frequent movement breaks will also increase cognition.



**FIGURE 3.4** Schools should look for as many opportunities as possible for children to relate to nature. Indooroutdoor spaces like this are perfect because they bring abundant daylight and contain lots of greenery.



**FIGURE 3.5** Movement-friendly design is not just about setting aside areas for active play. All too often, the primary area in which students spend most of their school day is a classroom with limited opportunities for free and spontaneous movement. This space, in contrast, is rich with activities but still encourages children to move about all day.

Neuroplasticity is the brain's remarkable capacity to change and reorganize itself through experiences. Varied learning experiences stimulate different brain areas and promote cognitive flexibility. Research shows that diverse learning activities enhance cognitive flexibility and brain plasticity. Outdoor learning spaces and activity zones that offer different types of activities can support this.

Mindfulness practices enhance neuroplasticity by increasing the density of the hippocampus and reducing the volume of the amygdala. These changes are associated with improved emotional regulation and cognitive function. Incorporating natural light and biophilic design elements, such as plants and water features, can create an environment conducive to mindfulness and neuroplasticity.

Physical activity increases the production of neurotrophic factors that support brain health. Exercise has been linked to improved cognitive function and greater brain plasticity. Designing movement-friendly spaces and encouraging physical activity and movement breaks can support brain health and neuroplasticity.

# 3.4 Personal Development and Life Skills

# 3.4.1 Developing Critical Life Skills

Skills such as decision-making and stress management are crucial for both academic and life success.

Strategy	Description	Spatial Elements
Decision-making workshops	Teaching decision-making skills	Multi-use spaces, interactive boards
Stress management techniques	Time management and relaxation exercises	Comfortable seating, calming areas
Emotional intelligence programs	Developing interpersonal skills and self-awareness	Inclusive environments, supportive settings

## TABLE 3.6 Life Skills Training

#### Neuroinclusive Considerations

**Comfortable Seating:** Providing various seating options will accommodate different needs. **Interactive Boards:** Supply tools for tactile and visual engagement with learning materials.

Decision-making and stress management skills are essential for navigating life's complexities. Decisionmaking workshops can empower children to make informed choices. Research indicates that decisionmaking skills are linked to better academic and life outcomes. Multi-use spaces equipped with interactive boards can support these workshops.

Training in stress management techniques, such as time management and relaxation exercises, helps children handle pressure effectively. Effective stress management has been shown to improve overall well-being and academic performance. Providing comfortable seating and calming areas can create an environment conducive to stress management.

Emotional intelligence programs that focus on developing interpersonal skills and self-awareness can enhance social interactions and academic success. Emotional intelligence is associated with better social interactions and academic performance. Designing inclusive environments with supportive settings can facilitate these programs.

#### 3.4.2 Enhancing Self-Esteem

A well-developed sense of self boosts self-esteem, fostering a positive self-image and overall wellbeing.

#### TABLE 3.7 Building Self-Esteem

Strategy	Description	Spatial Elements
Positive reinforcement	Recognizing and celebrating achievements	Art studios, performance spaces
Encouraging self- expression	Opportunities for creative outlets	Inclusive performance areas, art supplies
Constructive feedback	Providing thoughtful insights for growth	Inclusive learning spaces, recognition areas

#### **Neuroinclusive Considerations**

Sensory-Friendly Art Supplies: Provide art supplies that cater to different sensory needs. Inclusive Performance Areas: Ensure spaces are accommodating for all children.

Positive reinforcement, when provided thoughtfully, can boost children's self-esteem. Recognizing and celebrating achievements, no matter how small, fosters a positive self-image. Art studios and performance spaces where children can showcase their talents can support this.

Encouraging self-expression through creative outlets, such as art, writing, and drama, helps children explore their identities and build self-esteem. Opportunities for self-expression are linked to higher self-esteem and emotional well-being. Inclusive performance areas and sensory-friendly art supplies can facilitate these activities.

Providing constructive feedback helps children understand their progress and areas for growth. This balanced approach builds confidence and a positive self-image without fostering an obsession with success. Designing inclusive learning spaces and recognition areas where children receive thoughtful insights can support this approach. Recognizing and celebrating achievements, no matter how small, fosters a positive self-image.

## 3.4.3 Holistic Health

Nurturing not just the mind but the body and spirit as well is essential for holistic health.

TABLE :	.8 Creating	Supportive	Environments
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Strategy	Description	Spatial Elements
Safe spaces	Supportive environments for emotional exploration	Therapeutic spaces, calming rooms
Balanced challenges	Activities that offer the right level of challenge	Structured environments, varied difficulty
Holistic wellness programs	Addressing physical, emotional, and mental health	Multisensory spaces, nature integration

#### **Neuroinclusive Considerations**

**Multisensory Spaces:** Engage multiple senses through textured walls, soothing sounds, and calming scents.

**Quiet Retreats:** Provide areas for decompression and relaxation to manage stress and sensory overload.

Encouraging self-expression through creative outlets, such as art, writing, and drama, helps children explore their identities and build self-esteem.



FIGURE 3.6 Quiet retreats like this need to be dispersed throughout the school. These should be places where children can go independently (with passive adult supervision) to read, draw, write, or sit quietly. Many schools provide such spaces within their libraries, but students are only allowed such respites according to rigid schedules. We are arguing for quiet retreats that children can choose to be in since they would be interspersed in all primary learning zones.

Creating supportive environments that nurture the mind, body, and spirit is essential for holistic health. Safe spaces where children can explore their thoughts and emotions are linked to improved emotional wellbeing and resilience. Therapeutic spaces and calming rooms can provide the necessary support for emotional exploration.

Balanced challenges, where activities offer the right level of difficulty, promote growth and adaptability. Designing structured environments with varied difficulty levels can support this approach. Holistic wellness programs that address physical, emotional, and mental health contribute to overall well-being. Multisensory spaces and nature integration can enhance these programs. Balanced challenges, where activities offer the right level of difficulty, promote growth and adaptability.



FIGURE 3.7 How schools can enhance a child's connection with the self.

# 3.5 A Journey to Self-Connection: Parul's Story

As a co–author of this book, I didn't have to look far to offer a good story about the importance of children connecting with themselves. This is an abbreviated story of my tumultuous childhood in which my schooling played such a key role.

As a young girl, I changed schools often due to my parents' movements around the country. Each time, I left one big, impersonal school for another, larger one, and with each move, I retreated more and more into myself. I was neither interested nor motivated to improve or make friends. My quiet, uncomplaining nature reinforced the dysfunction of my childhood and let my troubled existence go primarily unnoticed by my family.

Eventually, when I was 12 years old, I confessed my distress to my parents, who jumped into action by moving me from the big, institutional school I had been attending to a smaller school named Harmony School, a place known for its unique, child-centered approach to education. From the moment I entered Harmony School, I noticed a difference. The school's serene garden became my favorite place for mindfulness sessions that the school provided all children the opportunity to participate in. Here, I learned and practiced deep breathing exercises surrounded by nature's soothing sounds.

I began setting personal goals for my projects in the classroom, which was arranged with group tables and where the teachers eschewed traditional lectures for more hands-on group activities. Acting as guides, my teachers encouraged my autonomy, allowing me to explore my interests and pursue my goals enthusiastically. As I delved into my science projects, I often experienced a flow state, enjoying the challenges of solving complex problems in a noncompetitive environment. This state of flow, fostered by my connection with myself, enhanced my cognitive abilities and promoted my neuroplasticity. In other words, my brain was continuously adapting and growing through my experiences.

Harmony School also emphasized reflective practices. Each week, I spent time in a serene nook of the library, journaling about my learning and reflecting on my experiences. Looking back as a research scientist, I realize how this practice developed my metacognitive abilities, helping me understand how I learned best.

Through various activities, I explored my identity, discovering my strengths, values, and passions. Artistic expression played a key role in this journey. I painted and drew in the art studio, using my creations to express my inner world. This process was crucial in forming my personal identity and achieving holistic health.

At Harmony School, I also learned critical life skills. I participated in decision-making workshops and stress management techniques, which were invaluable in handling everyday pressures. Feedback from my teachers was constructive and nurturing, helping me understand my progress and areas for growth without becoming overly obsessed with success.

Years later, the lessons I learned at Harmony School became the foundation of a balanced and fulfilling life. My ability to regulate emotions and stay motivated helped me navigate the complexities of higher education and my career as an architect and then as a researcher. The cognitive skills and resilience I developed allowed me to adapt and thrive in various situations. My strong sense of identity and holistic health supported me in forming meaningful relationships and maintaining a positive outlook on life. The critical life skills and self-esteem I built enabled me to make informed decisions and face challenges confidently.

Growing up in an environment that prioritized self-connection equipped me to navigate the consequences of disconnection, prevalent in modern society. Unlike many of my peers from so-called "reputed" schools who struggled due to emotional disengagement and a lack of introspection, I deeply understood my thoughts, feelings, and values. This connection with self helped me manage personal emotions effectively, fostering emotional resilience and mental health.

In a world where many sought external validation and faced the pressures of conformity, my strong self-connection gave me a stable sense of identity and high self-esteem. I was less susceptible to peer pressure and consumerist tendencies and could focus, instead, on genuine self-expression and personal

fulfillment. The skills and values I developed at Harmony School helped me find true satisfaction and happiness, avoiding the pervasive malaise that affected many other children I encountered in the community.

My story illustrates the power of an education system that values connection with self. By integrating emotional regulation, intrinsic motivation, cognitive development, personal growth, and well-designed learning environments, Harmony School cultivated academically capable, emotionally intelligent, self-aware, and resilient children. My journey demonstrates the significant impact such an education can have, creating truly balanced and fulfilled individuals, ready to face future challenges with confidence and grace.

Imagine a school where children from diverse backgrounds converge, each bringing unique experiences, perspectives, and emotions, enriching the school's cultural fabric. This vibrant environment is not just a place for academic learning but a dynamic community where significant connections are formed. These interactions between students, educators, and the broader community are instrumental in shaping their educational journeys and personal development.

However, this ideal scenario is far from the reality in many schools today. Both learning systems and spaces remain siloed, heavily favoring cognitive skills over social and interpersonal skills. This imbalance fosters a culture of unhealthy competition rather than collaboration, deeply embedding a competitive mindset in children that often carries forward into adulthood. As these individuals transition into workplaces where teamwork is essential, they find themselves ill-prepared, facing significant challenges in adapting to environments that prioritize collective success over individual achievement.



FIGURE 4.1 Children's interactions with each other significantly shape their educational journey and personal development.

# 4.1 Understanding Connection with Others

"Connection with others" is at the heart of what makes effective educational environments. When we look at the relationships that children build with peers, educators, and the broader community, we see the foundation of their learning journey. These interactions do more than just fill a day with activity; they provide a safe space for exploration, encouraging kids to step out of their comfort zones and engage deeply. This isn't just about making friends—it's about building a scaffold for cognitive development, emotional intelligence, and social skills that shape a child's ability to learn and grow.

The absence of these connections often leads to social isolation and, in many cases, bullying. Bullying primarily stems from a lack of meaningful relationships and understanding among students. When children feel disconnected, they are more likely to exhibit aggressive behaviors toward others. Therefore, fostering strong interpersonal connections is crucial in creating a safe and supportive learning environment where bullying is less likely to occur.

Safety is not the absence of threat—but the presence of connection.

-Dr Gabor Mate, "The Big Interview"

Advances in neuroscience have underscored something crucial: Our need to connect is hard-wired into us. It's an evolutionary trait that has kept us safe from threats and helped us thrive in challenging environments. Today, while the threats may be different, the need for connection remains. This is why we must prioritize creating educational settings that foster genuine relationships—because our very wiring depends on it. It's not just about academic success; it's about preparing children to be successful humans in a complex world.



**FIGURE 4.2** Neurodiverse students might find large, noisy group interactions overwhelming, whereas smaller, structured interactions could be more engaging and less stressful. Implementing strategies that offer varied interaction models ensures that all students can engage in meaningful ways.

Different neurotypes can dramatically affect the ways in which students form and maintain connections. Educators should foster an environment where these differences are recognized and respected.

To understand the importance of connections better, we can examine two key dimensions: the role of social interactions in cognitive development and the development of emotional and social intelligence through natural interaction.

#### 4.1.1 The Significance of Social Interactions in Cognitive Development

Social interactions and relationships are the cornerstone of learning and human development. The dynamics of how children interact with each other, teachers, and the parent community play a critical role in educational settings.

When they interact in group settings, students are exposed to diverse perspectives and challenged to explain and justify their thoughts, enhancing critical thinking skills and deepening understanding.

Studies, such as those by Lev Vygotsky, have illustrated the concept of the "zone of proximal development," which shows that social interactions enable students to perform tasks they might not be able to accomplish independently.



**FIGURE 4.3** Social interactions not only support a nurturing learning environment but also serve as powerful catalysts for cognitive development.



**FIGURE 4.4** Vygotsky's concept of the zone of proximal development (ZPD) illustrates that social interactions enable students to perform tasks they might not be able to accomplish alone.

Our evolutionary need to connect also enhances cognitive processes. Neuroscientific research shows that our brains can achieve synchrony during interactions, a phenomenon that supports cooperative learning and enhances cognitive development.



**FIGURE 4.5** When students work together, their neural activities can align, promoting deeper engagement and better problem-solving capabilities.

The "biological syncing" of students who are working together fundamentally enhances the effectiveness of collaborative learning. In other words, student collaboration has been shown to amplify cognitive development.

To effectively harness the power of social interactions for cognitive development, educators can implement various strategies. Table 4.1 outlines several strategies for cognitive development through social interaction, along with the spatial elements that can support these strategies.





#### 4.1.2 Developing Emotional and Social Intelligence through Interaction

Natural social interactions, which arise organically during daily activities, play a pivotal role in helping students manage their emotions and collaborate effectively with others. The profound impact of emotional intelligence on both personal and academic success cannot be overstated, as skills like

empathy and social adeptness are integral for navigating the complexities of educational pathways and personal relationships.

Moreover, when students lack these critical connections, they are more susceptible to bullying behaviors. Bullying often arises from feelings of disconnection and misunderstanding among peers. Thus, promoting natural interactions and emotional intelligence is key to fostering a harmonious school environment and preventing bullying.



**FIGURE 4.9** Frequent, unstructured social interactions within a school community are crucial for developing essential emotional skills such as empathy, self-regulation, and resilience.

Being physically together in a school environment offers significant opportunities for enhanced communication, which is instrumental in strengthening students' emotional and social intelligence. This face-to-face interaction is invaluable not only for fostering deeper emotional connections but also for building a supportive learning community. The direct, in-person exchanges provide nuanced emotional insights that digital communications often fail to capture while emphasizing the critical importance of prioritizing real-world interpersonal engagements in educational settings to ensure holistic development.

Implementing emotional literacy programs and conflict resolution workshops as part of the curriculum can significantly enhance these skills. However, integrating these programs into the school's daily culture ensures they become more effective and reflective of real-world interactions. Skills like empathy and social adeptness are integral for navigating the complexities of educational pathways and personal relationships.

To enhance emotional and social intelligence through natural interaction, schools can employ various strategies. Table 4.2 provides an overview of these strategies and the corresponding spatial elements that can facilitate their implementation.

## Table 4.2 Strategies for Enhancing Emotional and Social Intelligence through Natural Interaction

Strategy	Description	Spatial Elements
Figure 4.10 Peer Mentoring	Facilitate natural mentoring opportunities where older students guide younger ones informally	Spaces with natural surveillance, and comfortable communal seating areas allow children of different age groups to mingle
Figure 4.11 Cooperative Learning	Encourage spontaneous group activities that build social skills through project-based learning	Project rooms, and interactive areas are designed for natural collaboration
FIGURE 4.12 Emotional Literacy Integration	Integrate emotional skills development into daily activities rather than isolated sessions	Multifunctional sensory areas and emotional literacy zones that are accessible throughout the day

# 4.2 Neuroplasticity and Its Role in Educational Environments

Neuroplasticity, the brain's capacity to form and reorganize synaptic connections, especially in response to learning experiences, plays a pivotal role in shaping cognitive development within diverse learning spaces. This capacity for neural adaptation is not uniform; it varies across individuals, highlighting the necessity for educational approaches that accommodate diverse neurological needs.

**4.2.1 Educational Impact:** Engaging in a socially enriching environment can significantly enhance the brain's plasticity, promoting cognitive development, emotional resilience, and social skills. Activities that stimulate neuroplasticity—such as group problem-solving, interactive challenges, and physical activities requiring coordination—prove particularly effective. These activities are especially valuable in learning environments that cater to a broad spectrum of learners, including those with neurodivergent conditions, by supporting varied cognitive functions and sensory inputs.



**FIGURE 4.13** Research shows engaging in complex social interactions and problem-solving activities enhances the brain's executive functions.

According to research by Adele Diamond, activities involving complex social interactions and problemsolving can enhance executive functions like working memory, cognitive flexibility, and self-control. These benefits are crucial for all students but can be particularly transformative for students who experience neurodivergence, as these activities provide structured yet flexible ways to engage with learning material.

Table 4.3 Strategies	for Enhancina Emotional	and Social Intelligence	through Natural Interaction
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Activity Type	Description	Cognitive Benefits
Interactive problem-solving	Tasks that require group collaboration to solve complex problems	Enhances cognitive flexibility and problem-solving skills
Role-playing games	Games that simulate social scenarios and require players to assume roles and interact accordingly	Improves empathy and social cognition

Activities involving complex social interactions and problemsolving can enhance executive functions like working memory, cognitive flexibility, and self-control.

#### 4.2.2 Inclusive Strategies for Neuroplastic Development:

**a. Multisensory Learning Methods:** Utilize visual, auditory, and kinesthetic teaching aids to engage different learning styles and neurological profiles.

**b.** Flexible Learning Environments: Design spaces that offer various areas tailored to different activities—quiet zones for focused work and open areas for interactive learning.

**c. Customized Learning Paths:** Provide personalized learning experiences that allow students to navigate through content at their own pace, using adaptive technology where helpful.

**d. Continuous Feedback and Adaptation:** Implement a feedback system that allows for the continuous tailoring of educational strategies to meet individual student needs, encouraging growth and adaptation in all students.

By integrating these inclusive strategies, learning environments can better harness the potential of neuroplasticity, offering all students—regardless of their neurological makeup—the opportunity to maximize their cognitive and social development.

# 4.3 The Role of Community Connection in Social Development

The Harvard longitudinal Study of Adult Development suggests that the strength of our interpersonal relationships is the most significant predictor of a fulfilling life. This underscores the educational imperative to cultivate strong community ties, which enhance not only academic skills but also foster long-term personal well-being and a sense of civic responsibility. Engaging students with their local communities enriches their educational experience and nurtures essential life skills.

Community connections play a pivotal role in enriching students' educational experiences and developing their social competencies. Schools that foster strong ties with their local communities not only enhance students' academic skills but also instill a deep sense of belonging and civic responsibility.

#### 4.3.1 Enhancing Social Skills through Community Engagement

Engaging students with the community provides practical experiences that complement their academic learning.

#### Community Partnership Initiatives:

Collaborations with local businesses, nonprofit organizations, and government agencies can provide students with real-world experiences and learning opportunities. These partnerships often lead to projects that address local issues, allowing students to contribute meaningfully to their communities.

The strength of our interpersonal relationships is the most significant predictor of a fulfilling life.



**FIGURE 4.14** Community service activities help students develop empathy, cooperation, and effective communication skills, which are essential for their personal and professional lives.

Strategy	Description	Benefits
Local collaboration projects	Projects that involve students working with local organizations on community challenges	Enhances practical skills and civic engagement
Service learning	Educational experiences that integrate meaningful community service with instruction and reflection	Fosters empathy and personal growth

Creating inclusive community connection opportunities is key. For neurodiverse students, this might mean designing projects with various levels of sensory input and social interaction. Activities that do not require direct verbal communication but instead use visual or physical collaboration can be particularly effective. This allows students who might be overwhelmed by traditional communicative approaches to participate fully and comfortably.

# 4.4 Designing Learning Spaces for Connection: Beyond Conventional Classrooms



**FIGURE 4.15** A well-designed school will have many spaces like this where students interact formally and informally because of the recognition that the conventional classroom setup is a major barrier to fostering meaningful connections among students and between students and teachers.

Embracing more dynamic and diverse learning environments can dramatically improve the quality and effectiveness of education by enhancing these connections.

# 4.4.1 Embracing Dynamic and Diverse Learning Environments

To truly enhance "connection with others," modern educational environments must transcend traditional boundaries, creating spaces that adapt to various learning and teaching styles. This flexibility supports a more personalized and responsive educational experience, crucial for meeting students' diverse needs.



FIGURE 4.16 A few strategies to enhance each student's connection with others in school.

# 4.5 Types of Learning Spaces to Enhance Connection

By doing away with the conventional classroom and instead providing a variety of learning spaces, we can significantly enhance children's connections to peers, teachers, and the parent community. Diverse learning environments cater to different learning modalities and encourage interaction. Here are several types of learning spaces that facilitate these connections.

#### Learning Commons



FIGURE 4.17 Centralized, flexible spaces serve as hubs for collaborative activities, group projects, and social interaction. These areas encourage students to work together, share resources, and engage with teachers in a more informal setting.

#### **Breakout Spaces**



**FIGURE 4.18** Small, versatile areas are designed for focused group work or individual study. These spaces promote collaboration among students and provide opportunities for teachers to interact with small groups, fostering stronger connections.

#### Makerspaces



**FIGURE 4.19** Create hands-on, creative environments where students can experiment, build, and learn through doing. Makerspaces support project-based learning and collaboration, allowing students to connect over shared interests and work together on innovative projects.

#### **Outdoor Learning Areas**



**FIGURE 4.20** Natural settings that extend learning beyond the indoor environment support environmental education and provide a calming atmosphere for social and emotional development. Outdoor learning areas encourage physical activity and connection with nature, which can enhance well-being and social interaction.

#### **Flexible Learning Studios**



FIGURE 4.21 Adaptable spaces can be reconfigured to suit various teaching methods and learning activities. Flexible learning studios break down the barriers of conventional seating arrangements, allowing for more interactive and engaging learning experiences.



Community Hubs

FIGURE 4.22 Spaces within the school are open to parents and community members. These hubs facilitate community involvement in the educational process, fostering a sense of belonging and partnership between students, teachers, and parents.

### Learning Cafés



**FIGURE 4.23** Informal spaces where students and teachers can engage in casual discussions foster a relaxed atmosphere for sharing ideas and building stronger connections. These areas encourage spontaneous interactions and conversations that can lead to deeper understanding and collaboration.

## 4.4.2 Bidding Adieu to the Classroom Model

One of the biggest disadvantages of the conventional classroom model is that teachers in lecture mode often seem unapproachable to children, which limits the potential for deeper connections between teachers and students. The image below shows what is possible in the spaces beyond classrooms.



**FIGURE 4.24** In setups where the teacher interacts with small groups or individuals, the connection feels much more meaningful and real.

Like parents, teachers serve as role models for young children. Making meaningful connections can enhance not only the child's academic prowess but also allow the teacher to recognize and nurture each child's unique abilities, which is almost impossible when addressing an entire class.

The conventional classroom layout, where all students face the teacher or board, inherently hinders faceto-face interactions among students. This setup creates a passive learning environment, discouraging peer-to-peer communication and collaboration.



FIGURE 4.25 Modern educational environments that prioritize dynamic and diverse spaces encourage active engagement and interaction among students and teachers alike.

Incorporating these diverse learning spaces into school design not only supports varied educational activities but also enhances the connections among students, teachers, and the broader community. These environments promote autonomy and safe interaction:

**Variety of Interaction Spaces:** Different spaces for different types of interactions—collaborative, quiet, creative, and outdoor—ensure that all students find areas where they feel comfortable and engaged.

**Enhanced Visibility and Accessibility:** Open layouts and strategic placement of learning spaces ensure that students and teachers are always within sight, promoting a sense of safety and community.

**Comfortable and Welcoming Atmosphere:** Well-designed, inviting spaces encourage students to relax, engage, and connect with others, enhancing their overall learning experience.

Neurodiverse students often benefit from learning environments that consider sensory needs and individual work preferences. Spaces should be adaptable, providing areas that reduce sensory overload and allow choice in seating and positioning. For instance, having areas with dimmed lighting or noise-canceling features can help students who are sensitive to sensory stimuli focus better and engage more deeply.

Table 4.5 Learning Spaces th	hat Foster Connection
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Environment Type	Features	Educational Impact
Learning commons	Centralized, flexible spaces	Supports collaborative activities and social interaction
Breakout spaces	Small, versatile areas	Promotes focused group work and teacher-student interactions
Makerspaces	Hands-on, creative environments	Encourages project-based learning and collaboration
Outdoor learning areas	Natural settings	Enhances well-being and environmental awareness
Flexible learning studios	Adaptable, reconfigurable spaces	Facilitates interactive and engaging learning experiences
Community hubs	Spaces open to parents and the community	Fosters community involvement and partnership
Learning cafés	Informal spaces for casual discussions	Encourages spontaneous interactions and collaboration

# 4.6 Conclusion: Revisiting Ancient Wisdom in Modern Education

As we close this chapter on the importance of human connections in education, it is crucial to recognize that our discussions, though underpinned by modern research, echo a truth deeply ingrained in human civilizations. The increasingly popular modern narrative advocating for extreme self-reliance and a narrow interpretation of self-love often overlooks the fundamental human need for connection. True self-appreciation should not mean isolating oneself or severing ties with the broader community. Rather, a healthy connection with oneself should empower individuals to forge meaningful and enduring relationships with others, as discussed in the previous chapter.

When children learn cooperation and collaboration in school, they are better prepared to establish healthy connections with others, which is one of the most essential life skills needed to navigate through life without the protection and safety net of their parents. Any organization can only be successful when all its people are cooperative and not competitive with each other. Yet, our schools still foster unhealthy competition, which does exactly the opposite of what we want for our children. By prioritizing collaboration over competition, we can cultivate environments where children learn to thrive together.
#### CHAPTER 4. COMMUNITY: CONNECTION WITH OTHERS

This concept is beautifully encapsulated in the philosophy of Ubuntu\*, emerging from the rich, red soils of the African savannahs, which offers a poignant reminder: "I am because we are." This wisdom teaches us that our well-being is intrinsically linked to the well-being of our community. It encourages compassion, support, and the sharing of oneself with others—not just for personal gain but for the collective good of the community.

The ancient Indian concept of Vasudhaiva Kutumbakam, which means "the world is one family," further challenges us to expand our circle of empathy to encompass the entire globe. This principle teaches us that every person, regardless of geographic or cultural differences, is part of our extended family. This worldview fosters a sense of global citizenship and responsibility, which is vital in today's interconnected world.

Both of these philosophies guide us toward a more inclusive and connected approach to education. They remind us that education should not merely be about the transfer of knowledge but about fostering a community where every member thrives. By emphasizing empathy, cooperation, and a deep respect for diversity, these principles are embedded in the very fabric of effective educational practices.

Reflecting on these age-old pearls of wisdom reinforced by contemporary scientific research, it is clear that our educational systems and spaces need a transformative shift. We must move beyond traditional academic confines and embrace educational practices that truly reflect human beings' inherent social nature. By designing educational spaces that facilitate deep, meaningful connections, we create environments that prepare students not just for academic success but for rich, fulfilling lives in harmony with the world around them.

As educators, architects, administrators, and policymakers, we have the opportunity—and indeed, the responsibility—to reshape our educational systems and spaces. Let us draw inspiration from both the past and the present to build schools that are not just centers of learning but vibrant communities that nurture the heart as much as the mind.

<sup>\*</sup> Ubuntu means "harmony" in Bantu.



# CONNECTION WITH THE ENVIRONMENT

## 5.1 Understanding Environmental Connections

Our connection with the environment, encompassing natural, built, and cultural aspects, significantly influences our cognitive, emotional, and social development. Recognizing how natural, built, and cultural environments impact our mood, efficiency, health, and productivity allows us to create spaces that support holistic development and address issues arising from environmental disconnection.



FIGURE 5.1 Our connection with our environment is not merely about the physical presence of elements but about how these elements interact with us to enhance our well-being and performance.

#### 5.1.1 The Significance of Our Environmental Ties

Humans have evolved in close interaction with their surroundings. Historically, our survival depended on our ability to understand and adapt to the natural environment. This deep-rooted connection has shaped our cognitive and emotional responses, making the environment a crucial factor in our overall well-being. Our connection with the environment can be broadly classified into three practical categories: natural, built, and cultural. Each of these categories encompasses different aspects of our surroundings that influence our cognitive, emotional, and social development, including technological and social elements.

Table 5.1 Understanding Environmental Connections

Category	What It Is	Why It's Important	How to Incorporate
Figure 5.2 Natural Environment	Connection to natural elements (earth, water, fire, air, ether), biophilia	Enhances cognitive function, reduces stress, promotes stewardship	Use natural materials, plants, water features, biophilic design
Figure 5.3 Built Environment	Human-made surroundings, ergonomic and flexible design, technological integration	Improves comfort, and health, supports diverse learning	Ergonomic furniture, flexible layouts, sensory- friendly materials, quiet zones, balance tech use
FIGURE 5.4 Cultural Environment	Local symbols, traditions, values, social interactions	Fosters a sense of belonging, strengthens cultural identity	Incorporate traditional music, art, rituals, reflect local culture, adaptive spaces, design for social interaction

Activities involving complex social interactions and problem-solving can enhance executive functions like working memory, cognitive flexibility, and self-control.

#### 5.1.2 Embracing the Natural Environment

The natural environment includes plants, trees, water bodies, wildlife, and other life forms. In Indian philosophy, all life is believed to be composed of five natural elements: earth (Prithvi), water (Jal), fire (Agni), air (Vayu), and ether (Akash). Staying connected to these elements is vital for our well-being.



**FIGURE 5.5** Our inherent connection to nature, often called biophilia, suggests a genetic predisposition to seek connections with the natural world. This connection is essential for our mental and physical health.

#### 5.1.3 The Role of the Built Environment

The design of these environments has a significant impact on the quality of our daily lives, especially in learning spaces where children spend a substantial portion of their day.



FIGURE 5.6 The built environment refers to human-made surroundings that provide the setting for human activity, including buildings, parks, urban spaces, and infrastructure.

#### 5.1.4 Incorporating Local Context and Culture

The local context and cultural environment encompass the beliefs, values, norms, practices, language, traditions, rituals, art, music, cuisine, social behaviors, educational systems, and historical context relevant to the community where the school is located. This also includes factors such as climate, topography, traffic, and other local challenges.



FIGURE 5.7 Vernacular architecture, which reflects local traditions and materials, is a vital aspect of the cultural environment.

Understanding and integrating these aspects can provide a richer, more holistic approach to environmental design.

#### 5.1.5 Integrating Natural, Built, and Cultural Elements

Optimal environmental design seamlessly integrates natural, built, and cultural elements to create spaces that foster holistic development. While natural environments are inherently beneficial for human beings, factors such as thermal conditions, noise and air pollution, and security concerns often necessitate the use of built environments. In many urban areas, children spend about 90% of their time indoors, negatively impacting their health and disrupting their connection with the natural world and their true selves. Thus, creating a balance between these environments is crucial, ensuring that children not only spend more time outdoors but also feel connected to nature when indoors.

Additionally, modern school buildings often lack cultural elements, resulting in homogeneous-looking schools worldwide. Schools must consider the cultural context of their location in both the design of their learning systems and learning spaces. This sense of identity enhances feelings of belonging, fostering a healthy connection between children and their environment.



FIGURE 5.8 The ideal design blurs the boundaries between indoors and outdoors, creating a seamless flow that allows children to experience the benefits of nature regardless of their location.

By thoughtfully integrating natural, built, and cultural elements, we environments can create that academic achievement support while fostering a deep connection with the world around us. This well-rounded approach ensures that learning spaces are inclusive, supportive, and conducive to the cognitive, emotional, and social development of all children.

By thoughtfully integrating natural, built, and cultural elements, we can create environments that support academic achievement while fostering a deep connection with the world around us.

## 5.2 Positive Impacts of a Healthy Environmental Connection

A healthy connection with the environment brings numerous benefits, impacting cognitive, emotional, and social aspects of development. Understanding these benefits can help in designing learning spaces that promote overall growth and well-being.

#### 5.2.1 Emotional and Social Benefits of Nature

**Stress Reduction:** Natural environments provide a calming effect, which significantly reduces stress levels in children. The presence of greenery, water, natural light, and fresh air can create a soothing atmosphere, helping children manage anxiety and stress more effectively.

**Improved Mood and Behavior:** Interaction with natural elements has been linked to improved mood and behavior in children. It fosters a sense of peace and well-being, leading to better emotional regulation and fewer behavioral issues.

**Sense of Responsibility:** Connecting to nature from a young age instills a sense of responsibility and care for the environment. This connection fosters emotional growth and empathy, not just toward the natural world but also toward other people.

#### 5.2.2 Design and Ergonomics in Built Spaces

**Comfort and Engagement:** Adjustable furniture and diverse spaces that accommodate different activities help children maintain focus and participate more actively in their learning.



FIGURE 5.9 Ergonomically designed spaces that cater to children's physical needs can significantly enhance comfort and engagement.

**Physical Well-being:** Ergonomic design reduces the risk of physical discomfort and injury. Welldesigned furniture and spaces support proper posture and movement, which is crucial for children's physical development and overall well-being.

**Environmental Quality:** Proper lighting, acoustics, and thermal comfort are essential for sustaining attention and productivity.



FIGURE 5.10 Spaces with good natural light, sound-absorbing materials, and effective climate control enhance the learning environment, making it comfortable year-round.

#### 5.2.3 Cultural Context and Learning Environments

**Sense of Belonging:** Local cultural values and norms affect how children perceive and engage with their surroundings. Schools can incorporate local cultural symbols, traditions, and practices to foster a sense of belonging among students.

**Behavioral Influence:** Local practices influence the use of space. Rituals, traditions, and social practices determine how environments are utilized, contributing to the sense of place and belonging.

Design and Aesthetics: Local preferences shape the aesthetics and functionality of built environments.



FIGURE 5.11 Architectural styles, color schemes, and spatial organization should, ideally, reflect local identities and values.

## 5.3 Neuroplasticity and Environmental Influence

Neuroplasticity, the brain's ability to reorganize itself by forming new neural connections, is significantly influenced by our environment. Enhancing neuroplasticity is crucial in adapting to our rapidly changing world, where cognitive flexibility, emotional resilience, and lifelong learning are essential.

#### 5.3.1 Importance of Enhancing Neuroplasticity

**Adapting to Change:** In an ever-evolving world, the ability to adapt to new situations and learn continuously is crucial. Neuroplasticity enables individuals to develop new skills, adapt to changes, and overcome challenges, fostering lifelong learning and personal growth.

**Emotional Resilience:** Enhanced neuroplasticity contributes to emotional resilience, allowing individuals to better cope with stress, recover from setbacks, and maintain mental health. A strong connection with the environment supports emotional stability by providing restorative and calming experiences.

**Lifelong Learning:** Promoting neuroplasticity is essential for lifelong learning, as it helps individuals stay curious, open-minded, and ready to acquire new knowledge and skills. Engaging with diverse environmental elements encourages continuous learning and intellectual growth.

#### Table 5.2 Enhancing Neuroplasticity through Environmental Connections



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## Strategy Description Proper lighting, acoustics, and ergonomic design support cognitive functions and emotional health, reducing stress and enhancing well-being. FIGURE 5.15 Cognitive Health Design Exposure to diverse cultural experiences enhances cognitive flexibility and emotional resilience by stimulating neural pathways.

FIGURE 5.16 Cultural Experiences

### 5.4 Neuroplasticity and Environmental Influence: Designing for Environmental Connection

Designing learning environments that foster a strong connection with natural, built, and cultural environments involves thoughtful architectural and design strategies. These strategies must consider the diverse needs of children, including those who are neurodivergent, to ensure inclusive and supportive spaces.

To achieve this, we explore two main areas: **architectural strategies for well-being** and **enhancing sensory experiences in learning spaces**. These areas cover a range of design considerations that collectively support children in developing a positive connection with their environment, which in turn facilitates their overall development and well-being.

#### 5.4.1 Architectural Strategies for Well-being

Creating well-designed learning environments can significantly enhance the overall health, well-being, and academic performance of children.

#### a) Biophilic Design



FIGURE 5.17 Biophilic design involves creating environments that deeply connect students with nature.

Key elements of biophilic design include these features:

**Natural Materials and Patterns:** This technique utilizes materials like wood, stone, and natural fibers and incorporates patterns found in nature, such as fractals and organic shapes.

**Maximizing Natural Light:** Enhancing daylight exposure through skylights, large windows, and strategically placed openings while ensuring good ventilation for fresh air and maintaining indoor air quality.

**Visual Access to Nature:** Providing views of outdoor landscapes and green spaces from inside buildings, along with incorporating water features like fountains, ponds, or aquariums, to add soothing auditory and visual elements.

**Mimicking Natural Light Variations:** Supporting circadian rhythms and improving well-being by creating comfortable thermal environments with varied temperatures and airflow patterns similar to natural settings.

**Encouraging Biodiversity:** Integrating a variety of plants and creating habitats that support local wildlife, such as birds, butterflies, and small mammals, help connect students to nature even indoors. For example, a school garden could include native plants that attract butterflies and bees, bird feeders and birdhouses to support local bird species, and small ponds or water features that provide a habitat for frogs and other small aquatic creatures.

**Organic Shapes in Architecture:** Reflecting natural forms through curves and organic shapes in the design of spaces, fostering a sense of harmony and well-being.

Biophilic design helps children develop a sense of belonging and responsibility toward their surroundings by fostering a deep connection with the natural environment. This connection not only reduces stress and improves cognitive functions but also enhances emotional well-being and social interactions.

**b)** Diverse and Adaptive Learning Spaces: Creating diverse learning spaces is essential for accommodating different learning modalities and styles, thereby fostering stronger connections between students, educators, and their environment. These spaces should be adaptable to evolving educational methods and changing needs over time, promoting a continuous connection with the learning process.



**FIGURE 5.18** Instead of focusing solely on reconfigurable furniture, the emphasis should be on designing spaces that inherently support various educational activities.

This includes quiet zones for individual study, collaborative areas for group work, and interactive zones for hands-on learning. Such an approach ensures that learning environments remain dynamic and responsive, facilitating meaningful connections that enhance engagement, understanding, and overall well-being for both students and educators.

**c) Encouraging Movement:** The design of learning environments should encourage movement throughout the day. Features such as flexible seating, standing desks, and designated areas for physical activity can help reduce sedentary behavior that is detrimental to health. Movement breaks and active learning environments help all students stay engaged and focused.

**d) Green Infrastructure:** Incorporating features like green roofs, living walls, and rain gardens can enhance the aesthetic and environmental quality of school grounds. These features also provide hands-on learning opportunities about sustainability and ecology, offering sensory-rich experiences that can benefit all students.



FIGURE 5.19 Providing ample opportunities for movement not only enhances physical health but also supports cognitive and emotional well-being.

**e) Sustainable Practices:** Implementing sustainable building practices, such as using eco-friendly materials, energy-efficient systems, and water conservation measures, teaches students about environmental responsibility and conservation. These practices create healthier indoor environments, which are crucial for the well-being of all students.

**f) Neuroinclusive Considerations** Designing learning environments with neuroinclusive considerations ensures that all children can thrive.

Table 5.3 Neuroinclusive C	Considerations	for School	Design
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Consideration	Description	
Quiet Zones and Sensory Breaks	Creating quiet zones and spaces for sensory breaks help students who need a calm environment to reset and refocus.	
Flexible Seating Options	Providing various seating options, such as bean bags, rocking chairs, and standing desks, accommodate comfort and concentration needs.	
Visual Supports	Using visual schedules, labels, and clear signage help students understand and navigate their environment more quickly.	
Acoustic Design	Minimizing background noise and using sound-absorbing materials reduce auditory distractions and improve focus for all students.	
Predictable Routines	Designing spaces that support predictable routines help students feel more secure and reduce anxiety.	
Sensory-Friendly Materials	Incorporating materials that are pleasant to touch and visually soothing create a comfortable learning environment for students with sensory processing differences.	



**FIGURE 5.20** Create quiet zones and spaces for sensory breaks to help students who need a calm environment to reset and refocus.

#### 5.4.2 Enhancing Sensory Experiences in Learning Spaces

Enhancing sensory experiences in learning environments can greatly contribute to students' overall well-being and engagement. Here are some these strategies:

a) Natural Sensory Elements: Incorporating elements that engage multiple senses—such as gardens with varied plant species, water features with soothing sounds, and areas with different textures—enhances children's sensory experiences and promotes neuroplasticity.



FIGURE 5.21 Sensory-rich environments are particularly beneficial for students who have unique sensory needs.



**FIGURE 5.22** Biomorphic patterns can improve cognitive function and emotional well-being by mimicking the complexity and diversity of the natural world, providing a stimulating yet calming environment.

**b) Biomorphic Patterns:** Using biomorphic patterns in the design of indoor spaces can evoke natural forms and processes, creating an environment that feels connected to nature.

**c) Indoor Sensory Integration:** Creating indoor environments that offer rich sensory experiences can include tactile walls, varied flooring textures, and multisensory learning tools. These elements can stimulate sight, touch, sound, and even smell, making learning more engaging and effective for all students.

**d) Sensory Pathways:** Designing pathways that incorporate different sensory elements, both indoors and outdoors, can encourage exploration and sensory engagement. These pathways can include varied textures, colors, and interactive elements that children can touch and explore, providing inclusive sensory experiences that support all students.

By implementing these architectural and design strategies, schools can create environments that not only support academic achievement but also foster a deep connection with natural, built, and local cultural environments. This holistic approach ensures that learning spaces are inclusive, supportive, and conducive to the cognitive, emotional, and social development of all children.

## CHAPTER 6

# SELF-TRANSCENDENCE— THE ULTIMATE CONNECTION

## 6.1 Introduction

Self-transcendence involves reaching beyond one's own selfish interests to engage with something greater than oneself, contributing positively to the world, and achieving fulfillment and holistic health. This state also represents peak experiences where individuals find deep meaning, joy, and purpose in their lives.





In psychology, self-transcendence is defined as the act of rising above the ordinary limits of the self, often associated with spirituality and the search for meaning. Viktor Frankl described it as finding purpose through contributing to something greater, such as helping others or pursuing spiritual growth. Abraham Maslow included self-transcendence in his hierarchy of needs, highlighting the desire to go beyond the self and achieve a deeper connection with others and the universe.

In psychology, selftranscendence is defined as the act of rising above the ordinary limits of the self. Maslow's later work emphasized that self-transcendence, rather than self-actualization, represents the highest level of psychological development. He observed that individuals who achieve self-transcendence experience a deeper sense of fulfillment and well-being, as they connect with a higher purpose and contribute to the greater good. Maslow's research on highly successful and fulfilled individuals, including Albert Einstein and Eleanor Roosevelt, concluded that true fulfillment goes beyond self-actualization. This challenges the popular notion of success as a self-centered pursuit and highlights the importance of transcending personal interests to achieve ultimate fulfillment and well-being.

## 6.2 Why Self-Transcendence is the Ultimate Connection

Self-transcendence is considered the ultimate connection because it integrates and elevates every aspect of human experience. Here's why:

a) **Connecting with a Higher Purpose:** This can manifest through spirituality, service to others, or a commitment to a cause. Aligning with a purpose greater than oneself helps individuals find meaning and direction, guiding their actions toward positive contributions to the world. This sense of purpose strengthens one's connection to the broader environment and society, enhances relationships, and leads to a more fulfilling and impactful life.



**FIGURE 6.2** Approaching learning as a cooperative process rather than a competitive one can be the first step toward experiencing self-transcendence.

**b)** Holistic Integration: Achieving self-transcendence contributes to overall well-being. Practices such as mindfulness, meditation, and self-reflection are essential for promoting mental, emotional, and physical health. A balanced mind, body, and spirit enhance individuals' ability to connect deeply with themselves, others, and their surroundings. This holistic approach ensures that individuals achieve balance and harmony within themselves, which is essential for overall well-being.



**FIGURE 6.3** A balanced mind, body, and spirit connection enhances individuals' ability to connect deeply with themselves, others, and their surroundings.

c) Flow States: Experiencing flow, where individuals are fully immersed and engaged in activities such as music or art, contributes to a profound sense of joy and fulfillment. Flow helps individuals transcend their immediate circumstances and achieve a deeper sense of purpose and satisfaction, fostering a stronger connection with their inner self.



**FIGURE 6.4** Experiencing flow helps individuals achieve a deeper sense of purpose and satisfaction, fostering a stronger connection with their inner self.

**d)** Enhanced Relationships: Self-transcendence fosters deeper connections with others. Individuals build stronger, more meaningful relationships by moving beyond self-interest and embracing empathy, compassion, and selflessness. These enhanced relationships contribute to a supportive community and a sense of belonging, which is crucial for personal and collective well-being.



**FIGURE 6.5** Individuals build stronger, more meaningful relationships by moving beyond self-interest and embracing empathy, compassion, and selflessness.

e) Connection to the Larger Universe: Self-transcendence allows individuals to connect with something greater than themselves, whether it's the natural world, a spiritual realm, or a universal truth. This connection provides a sense of belonging and interconnectedness that transcends individual existence. It promotes a sense of stewardship and responsibility toward the environment and the larger community.



FIGURE 6.6 The connection to the larger universe enhances a sense of belonging.

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**f) Resilience and Growth:** Self-transcendence equips individuals with the resilience to navigate life's challenges. By embracing growth over momentary happiness, individuals develop the strength and adaptability needed to overcome obstacles and thrive. This resilience is critical for maintaining strong connections with oneself and others, even during difficult times.



FIGURE 6.7 Individuals develop resilience to overcome obstacles and thrive by embracing growth over momentary happiness.

**g) Authentic Living:** Living authentically and meaningfully is a key aspect of self-transcendence. By aligning actions with core values and higher purposes, individuals experience a deeper sense of joy and satisfaction that permeates all areas of life. Authentic living strengthens personal integrity and enhances connections with others who value honesty and authenticity. Living authentically and meaningfully is a hallmark of self-transcendent experiences. When individuals transcend personal limitations and egoistic tendencies, they unlock a deeper sense of joy and satisfaction that permeates all aspects of their lives.

#### Table 6.1 Why Self-Transcendence is the Ultimate Connection

Aspect	Description	Contribution to Connections
Connecting with a Higher Purpose	Aligning with spirituality, service, or a cause greater than oneself	Provides meaning and direction, strengthens connection to the broader environment and society
Holistic Integration	Practices like mindfulness, meditation, and self-reflection promote mental, emotional, and physical health	Ensures balance and harmony within oneself, enhancing the ability to connect deeply with self, others, and surroundings
Flow States	Being fully immersed and engaged in activities such as music or art	Leads to profound joy and fulfillment, fostering a stronger connection with the inner self
Deep Meaning and Purpose	Finding profound meaning and direction by connecting with a higher purpose	Guides actions and decisions, enhances relationships, and strengthens bonds with others sharing similar values
Enhanced Relationships	Moving beyond self-interest to embrace empathy, compassion, and selflessness	Builds stronger, more meaningful relationships and contributes to a supportive community and sense of belonging
Connection to the Larger Universe	Connecting with the natural world, spiritual realm, or universal truth	Provides a sense of belonging and interconnectedness, promoting stewardship and responsibility toward the environment and larger community
Resilience and Growth	Embracing growth over momentary happiness to navigate life's challenges	Develops strength and adaptability, critical for maintaining strong connections with oneself and others, even during difficult times
Authentic Living	Aligning actions with core values and higher purposes	Leads to a deeper sense of joy and satisfaction in all areas of life, strengthening personal integrity and enhancing connections with those who value honesty and authenticity

## 6.3 Barry Kaufman's Seven Principles of Becoming a Whole Person

Scott Barry Kaufman's principles of becoming a whole person, as outlined in his book *Transcend: The New Science of Self-Actualization,* provide a comprehensive framework for achieving holistic development. These principles offer practical guidance for integrating mental, emotional, and physical well-being, facilitating deeper connections with oneself, others, and the environment. Here are his seven principles elaborated:

**1. Accept Your Whole Self, Not Just Your Best Self:** Embrace strengths and weaknesses, fostering self-acceptance. Recognizing and accepting all parts of oneself, including imperfections, is essential for true self-love and authenticity. This acceptance helps individuals to be more compassionate toward themselves and others, fostering a supportive and non-judgmental environment.

**2. Learn to Trust Your Self-Actualizing Tendency:** Promote trust in one's intrinsic motivation and growth potential. Believing in one's capacity to grow and improve is crucial for personal development. This principle encourages individuals to listen to their inner voice and pursue their passions and interests, leading to greater fulfillment and self-actualization.

**3. Become Aware of Your Inner Conflicts:** Identify and address internal conflicts for better emotional regulation. Understanding and resolving inner conflicts can lead to better mental and emotional health. This awareness allows individuals to make peace with their past and move forward with clarity and purpose.

**4. Look Out for Lopsided Development:** Encourage balanced growth in all areas of life. Ensuring that development is not skewed toward one aspect (e.g., academics) at the expense of others (e.g., physical health, social skills) is essential for overall well-being. Balanced growth helps individuals to be more resilient and adaptable to various life situations.

**5. Create the Best Version of Yourself:** Inspire continuous self-improvement. Striving to improve oneself continually leads to personal growth and fulfillment. This principle emphasizes the importance of setting and pursuing goals, learning new skills, and pushing beyond comfort zones.

**6. Strive for Growth, Not Happiness:** Emphasize growth over momentary happiness. Pursuing personal growth, even when it involves challenges and discomfort, leads to long-term fulfillment and resilience. This principle highlights that true contentment comes from overcoming obstacles and achieving personal milestones.

**7. Harness the Power of Your Dark Side:** Use struggles constructively for resilience and empathy. Recognizing and utilizing negative experiences and emotions can lead to greater strength and understanding. This principle teaches that difficulties can be powerful catalysts for personal growth and empathy toward others who face similar challenges.

The "rules" for school design as they relate to making learning spaces more conducive to transcendence are somewhat intangible and difficult to pin down precisely. That is because transcendence is achieved within a holistic cultural context and no single element, like the physical design of learning spaces, can guarantee it. However, there is a far greater likelihood that children and young people will strive to reach beyond themselves when the right environmental conditions are present.

Kaufman's seven principles outlined earlier provide a good framework for the design of learning spaces as we have set forth below.



#### Table 6.2 Facilitating Kaufman's Principles through thoughtful design of School Environment



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**FIGURE 6.12** Provide resources and environments that support personal development, such as libraries, labs, and creative studios, where students can pursue their interests and goals.



**FIGURE 6.13** Design challenging and stimulating environments that encourage students to stretch their abilities and take on new challenges. Spaces that support group work, problem-solving, and real-world projects can be beneficial.

Strive for Growth, Not Happiness

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work through their challenges. Counseling centers, peer support groups, and safe spaces for open dialogue are crucial.

## 6.4 The Importance of Mind, Body, and Spirit Balance for Enhancing Connections

Achieving self-transcendence requires a foundational balance in mind, body, and spirit. This balance supports individuals in maintaining the health and stability necessary to reach peak experiences and states of transcendence. By achieving this balance, individuals are better equipped to connect deeply with themselves, others, and their surroundings.

**Connection with Self:** Practices that promote mental, physical, and spiritual health lead to a deeper understanding of oneself and a greater sense of peace and fulfillment. Engaging in activities that induce flow states contributes to overall well-being and a sense of purpose, fostering a strong connection with one's inner self. Thoughtfully designed physical environments, such as meditation rooms or quiet areas, can facilitate these practices by providing spaces that encourage reflection and tranquility.

**Connection with Others:** Shared self-transcendent experiences and values strengthen interpersonal bonds and foster a sense of community. Engaging in collective spiritual practices, service projects, or discussions of purpose promotes empathy and mutual support, enhancing social connections. Learning environments designed with communal spaces that encourage collaboration and interaction can significantly enhance these connections, fostering a sense of belonging and support.

Achieving selftranscendence requires a foundational balance in mind, body, and spirit. By cultivating balance in mind, body, and spirit, supported by a thoughtfully designed physical environment, individuals can maintain the equilibrium necessary for self-transcendence and continue to grow and thrive. This balance is crucial for sustaining strong connections with oneself, others, and

## 6.5 The Role of Resilience

Resilience is the capacity to recover from difficulties and maintain balance. It plays a critical role in achieving and sustaining self-transcendence. Resilience enables individuals to navigate life's challenges without losing their sense of self or connection to others and the environment. It fosters these traits:

**Adaptability:** The ability to adjust to new circumstances and continue pursuing goals despite setbacks. School environments that offer flexible learning spaces can support this adaptability, allowing individuals to adjust their surroundings to meet their needs.

**Inner Strength:** Building a strong foundation of mental, physical, and spiritual health helps individuals stay grounded and focused.

Resilience enables individuals to navigate life's challenges without losing their sense of self or connection to others.



**FIGURE 6.15** Environments that provide access to wellness resources, such as fitness areas, meditation spaces, and healthy eating options, contribute to this inner strength.

**Positive Outlook:** Maintaining a hopeful and positive attitude even in the face of adversity enhances well-being and fosters a sense of purpose.



FIGURE 6.16 Positive and inspiring school environments with uplifting design elements and ample natural light, can help maintain this outlook.

Resilience also involves embracing perceived risk and allowing children to fail without stigma. Creating conditions where children are encouraged to keep trying and improve in areas they care about, regardless of how many times they fail or underperform, is crucial, such as the following:

**Perceived Risk:** Allowing children to take risks and face challenges in a controlled environment helps them develop confidence and resilience.

**Learning from Failure:** Encouraging a culture where failure is seen as a learning opportunity rather than a stigma helps children develop a growth mindset. Spaces that celebrate experimentation and iterative processes, like maker spaces and innovation labs, can reinforce this mindset.

FIGURE 6.17 School environments can be designed to provide safe opportunities for risk-taking, such as through project-based learning, outdoor activities, and creative experiments.



**Persistence:** Supporting children to keep trying and getting better at things they care about or are really interested in, irrespective of how many times they fail, is essential for building resilience. School environments that provide continuous encouragement and resources for skill development can help sustain this persistence.

By cultivating resilience, supported by a school environment designed to meet diverse needs and promote risk-taking and persistence, individuals can maintain the balance necessary for self-transcendence and continue to grow and thrive. This resilience is crucial for maintaining strong connections with oneself, others, and the environment.

## 6.6 The Finnish Education System—An Example

The Finnish education system is a prime example of how creating learning environments that foster deep connections and balance can lead to holistic well-being and self-transcendence. However, while the Finnish system excels in many areas, it may not perfectly embody every aspect of self-transcendence discussed in this chapter.

**Enhancing Connection with Self:** The Finnish education system prioritizes the well-being and personal growth of each student. Schools in Finland emphasize individualized learning plans, allowing students to explore their interests and develop at their own pace. This approach helps students build self-awareness and a strong sense of purpose.



**FIGURE 6.18** By focusing on personal strengths and interests, Finnish schools encourage students to understand and embrace their potential, fostering a deep connection with themselves.

By cultivating resilience, supported by a school environment designed to meet diverse needs and promote risk-taking and persistence, individuals can maintain the balance necessary for self-transcendence.

**Enhancing Connection with Others:** Collaboration and social interaction are central to the Finnish educational model.



**FIGURE 6.19** Learning spaces are designed to promote group work and cooperative learning, helping students develop empathy and strong interpersonal skills.

Teachers in Finland act as facilitators, guiding students through collaborative projects and encouraging peer support. This focus on community and teamwork creates a nurturing environment where students feel connected and supported, enhancing their social well-being and sense of belonging.

**Enhancing Connection with the Environment:** Sustainability and environmental stewardship are integral components of the Finnish curriculum. Schools incorporate outdoor education, allowing students to engage directly with nature and learn the importance of caring for their environment. This hands-on approach helps students develop a deep appreciation for the natural world and understand their role in preserving it. By integrating environmental education into everyday learning, Finnish schools foster a sense of responsibility and interconnectedness among students.

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**Potential Gaps:** While the Finnish system excels in promoting holistic development, there may be areas where it could further enhance the self-transcendence experience. For example, while there is a strong emphasis on environmental stewardship, integrating more structured spiritual or philosophical discussions could deepen students' connection to higher purposes. Additionally, while Finnish schools promote balanced growth, there might be opportunities to further emphasize resilience-building activities that specifically address emotional and psychological challenges.

The Finnish education system exemplifies how fostering connections and maintaining balance can lead to self-transcendence.

**Leading to Self-Transcendence:** The Finnish education system exemplifies how fostering connections and maintaining balance can lead to self-transcendence. By creating environments that emphasize personal growth, community engagement, and environmental stewardship, Finnish schools help students reach their full potential and contribute meaningfully to society. Graduates of this system often pursue careers that align with their values and passions, demonstrating a commitment to causes greater than themselves.

The Finnish education system is a powerful example of how creating learning environments that foster connections with self, others, and the environment can lead to profound personal and societal transformation. It illustrates the transformative power of education in nurturing self-transcendent individuals who contribute meaningfully to the world. Following this model can inspire the next generation to transcend their circumstances, realize their fullest potential, and dedicate themselves to meaningful causes, ultimately creating a more connected and compassionate world.

Educators and policymakers must recognize that true success and fulfillment stem from selftranscendence rather than merely achieving high academic scores or personal accolades. Hypercompetitive school environments often inhibit children's natural tendencies to gravitate toward selftranscendence, fostering a self-centered pursuit of success. By creating educational systems that prioritize holistic development, emotional well-being, and opportunities for students to engage in meaningful, selfless activities, we can cultivate a generation that finds deep fulfillment and contributes positively to society.

Hyper-competitive school environments often inhibit children's natural tendencies to gravitate toward self-transcendence, fostering a self-centered pursuit of success.



**FIGURE 6.20** By embracing self-transcendence, we remove the barriers that inhibit our natural potential to connect deeply and meaningfully.

## 6.7 Conclusion: From Building Minds to Cultivating Coherence

As we conclude this exploration of self-transcendence, we begin to recognize that the journey of building minds is intrinsically tied to fostering profound connections with oneself, others, and the environment. Self-transcendence, as the ultimate connection, enriches these relationships and elevates our understanding of holistic well-being.

The insights from this chapter highlight the transformative power of self-transcendent experiences in creating a sense of purpose, fulfillment, and interconnectedness. The blurring of boundaries—seeing ourselves in everything and everything in ourselves—enables us to cultivate empathy, compassion, and a sense of responsibility toward the world. These qualities are essential for developing individuals who are both self-actualized and self-transcendent.

**Becoming Human:** Self-transcendence is an inherent human quality, a potential that lies within each of us. Our journey toward self-transcendence is, in essence, our journey toward becoming more fully human. This journey involves nurturing our innate capacities for empathy, connection, and holistic well-being. Through this process, we realize our fullest potential and contribute meaningfully to the world around us.

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This understanding of self-transcendence naturally leads us to the theme of the second part of our book, "Cultivating Coherence." In this section, we will explore how to build a learning ecosystem where learning spaces and learning systems are in sync with each other, facilitating our journey toward self-transcendence and, hence, becoming more human. This vision builds on our Portrait of a Learner (see Part Two) to bring clarity and focus to our educational goals. We will delve into how designing holistic learning spaces that integrate natural and built elements can support cognitive, emotional, and physical well-being; how developing school systems that prioritize empathy, collaboration, and sustainability can ensure that every student feels valued and connected; and how emphasizing core values of love, kindness, and service can embed these principles into the fabric of educational practices and policies.

By cultivating coherence, we aim to create educational experiences that transcend traditional boundaries, preparing students to become compassionate, responsible, and fulfilled individuals who can contribute positively to the world. As we move forward, let us carry the insights from building minds into the realm of cultivating coherence, transforming our educational environments into spaces where every individual can thrive and transcend and, ultimately, becoming more human.

# - **PART TWO** CULTIVATING COHERENCE





# CULTIVATING COHERENCE FROM SILOS TO SYSTEMS

## 7.1 Introduction: The Vision Of Coherent Education

The need for a more coherent and integrated approach has never been more urgent in the rapidly evolving landscape of education. Traditional educational systems are often fragmented, with each component functioning independently -- curricular design, learning environments, co-curricular activities, and support systems. This fragmentation hinders the healthy development of learners, who require a seamless, interconnected educational experience to thrive. Drawing heavily on the principles and practices advocated by the Common Ground Collaborative (CGC), this chapter explores how educational systems can move from silos to coherent systems.

To address these challenges, we propose a shift from siloed practices to a more coherent, integrated approach to education—one that aligns all aspects of the learning ecosystem to support the comprehensive development of every learner. Central to this approach is the concept of "Becoming human," which represents the ultimate goal of education: to nurture well-rounded individuals who are capable, compassionate, and competent in a complex world.



FIGURE 7.1 "Becoming Human" is the ultimate goal of education.


## **Coherent Learning Ecosystem**

FIGURE 7.2 The coherent learning ecosystem brings together all the elements of schooling now existing in separate silos into sync so that each element becomes an integral part of the whole enterprise whose primary goal is to help each child in "becoming human."

The conceptual framework of a coherent learning ecosystem encapsulates this vision. At the heart of the framework is the goal we have identified as "becoming human." This goal of becoming human is achieved via the development of the key competencies, character traits, and conceptual understandings that education should cultivate. Surrounding this core are the critical components of the learning ecosystem that are all critical to the becoming human goal: learning environments, curricular design, co-curricular design, and support systems. These elements must work harmoniously, each supporting and enhancing the others, to create a coherent educational experience.

The arrows connecting these components signify their dynamic and reciprocal relationships. Learning environments are not just physical spaces but integral parts of the educational process, shaping and being shaped by the curriculum and co-curricular activities. Similarly, support systems provide the necessary scaffolding to ensure that every learner can engage fully with the educational experience, meeting their social, emotional, and academic needs.

This chapter will explore how these elements, when integrated into a coherent system, can move us from the fragmented, siloed practices of the past to a more unified and effective approach to education. By focusing on the holistic development of the learner, we can create an educational ecosystem that not only imparts knowledge but also fosters the growth of balanced, respectful, rational, and innovative individuals ready to contribute meaningfully to society.

In the following sections, we will delve into each component of the conceptual framework, starting with the Portrait of a Learner, and examine how they collectively contribute to creating a coherent educational system. We will also identify the challenges that siloed practices pose and propose strategies for integrating these elements to achieve the desired coherence.

# 7.2 The Portrait of a Learner: Defining the Goal

At the core of our vision for a coherent educational system is the "Portrait of a Learner." This portrait serves as both the foundation and the guiding star for all academic endeavors, shaping how we design learning environments, develop curricula, and implement support systems. It represents the essential traits, competencies, and character that education should cultivate in every child, ensuring they are academically successful and well-rounded human beings capable of thriving in a complex world.



Our primary purpose is to build learning experts, able to make sense of the world and help the world make more sense.

FIGURE 7.3 Portrait of a learner.

#### 7.2.1 The Essential Traits of a Learner

The "Portrait of a Learner" is more than a list of academic achievements; it encompasses the holistic development of the individual. The diagram illustrates six key traits that define this ideal learner:

**1. A Balanced Person:** This trait emphasizes the importance of physical, emotional, and mental wellbeing. A balanced learner understands the need for harmony in all aspects of life, maintains a healthy lifestyle, manages stress effectively, and pursues interests that enrich their personal development.

**2. A Respectful Relationship Builder:** Social skills and the ability to foster positive relationships are crucial in today's interconnected world. A learner who can build and maintain respectful relationships demonstrates empathy, effective communication, and the ability to collaborate with others across diverse settings.

**3. A Rational Problem-Solver:** Critical thinking and problem-solving abilities are at the heart of this trait. The rational problem-solver approaches challenges methodically, using logic and evidence to find solutions. This trait is essential for navigating the complexities of modern life, where the ability to think critically is highly valued.

**4. A Contributing Citizen:** Education should also prepare learners to engage actively and responsibly in their communities. A contributing citizen is aware of their social and civic responsibilities and strives to make a positive impact on society through informed action and ethical behavior.

**5.** An Innovative Creator: In a rapidly changing world, creativity and innovation are key drivers of progress. An innovative creator is someone who thinks outside the box, uses their imagination to generate new ideas, and is not afraid to take risks in pursuit of novel solutions.

**6. A Compelling Communicator:** Another essential trait is the ability to articulate ideas clearly and persuasively. A compelling communicator can effectively express thoughts and ideas, whether in writing, speaking, or through other mediums, influencing others and fostering understanding.



FIGURE 7.4 A compelling communicator can effectively express thoughts and ideas.

The Human Commonalities	The Why	The What
Purpose & Balance	We all seek meaning and purpose in our existence and strive toward achieving balance in our lives.	A Balanced Person can independently pursue their passions, apply their values and balance their resources to achieve a sustained sense of personal wellbeing and purpose.
Patterns & Principles	We all look for recurring patterns and enduring principles to help us make sense of things.	A Rational Problem-solver can independently solve complex problems using sound reasoning based on an enduring understanding of causation.
Individuals & Groups	We all seek personal identity; we all need a place to belong. The groups we belong to, and how they organize themselves, have a defining influence on our lives.	A Respectful Relationship-Builder can independently build respectful relationships with diverse individuals and groups, building networks to achieve individual and collective goals.
Sustainability & Systems	We all share a duty of stewardship for the ecosystems we inhabit and a need to understand how they work.	A Contributing Citizen can independently contribute to sustainable, equitable social and ecological ecosystems through leadership, humility, empathy and the practice of service.
Imagination & Creativity	We are all creators; we are all capable of imagining new futures, new tools, new artifacts, and making them real.	An Innovative Creator can independently conceptualize and create a unique artifact, aesthetic or technological, to enhance human experience and/or expand human possibility.
Stories & Signals	We are all storytellers; we all send messages to each other, in different languages, for different purposes, in different genres, through different media.	A Compelling Communicator can independently design and deliver persuasive, informed communications, using different media, on principles and ideas that matter.

 Table 7.1 Portrait of a Learner

#### 7.2.2 Guiding Educational Design

The Portrait of a Learner is not just an aspirational vision; it is the foundation upon which all educational practices should be built. Every element of the educational ecosystem—from the physical design of learning spaces to the curriculum and support systems—should be aligned to develop these traits in learners.

Curricular and Co-curricular Design	Learning Environments	Support Systems
The curriculum should be interdisciplinary and integrated, breaking down traditional subject silos for a holistic learning experience. Co-curricular activities should complement the formal curriculum, providing real-world application opportunities to reinforce the traits in the Portrait.	Designed to nurture and enhance the traits outlined in the Portrait. Examples: Spaces promoting collaboration and communication are more likely to create respectful relationship builders and compelling communicators. Environments encouraging creativity and experimentation are vital for cultivating innovative creators.	Robust support systems addressing the diverse needs of students, including social- emotional learning programs, counseling services, and mentoring, contribute to developing balanced, resilient individuals capable of navigating life's challenges.

Table 7.2 Elements of the Educational Ecosystem.

#### 7.2.3. From Vision to Practice

The Portrait of a Learner is more than just a theoretical construct; it is a practical framework that should inform every decision made within an educational institution. By keeping this vision at the forefront, schools can ensure that all aspects of the learning ecosystem are working together to support the well-rounded development of students.

As we move forward in this chapter, we will explore how the elements of the educational ecosystem learning environments, curricular and co-curricular design, and support systems—can be aligned with the Portrait of a Learner to create a coherent, integrated system. This alignment is essential for moving from the fragmented, siloed practices of the past to a future where all learners have the opportunity to develop into the well-rounded individuals that our society needs.

## 7.3 Identifying The Silos: Current Challenges In Schools

Despite the growing recognition of the need for a more integrated and holistic approach to education, many schools today continue to operate in silos. These silos represent the fragmented nature of educational practices, where different aspects of the learning experience—curriculum, learning environments, co-curricular activities, and support systems—function independently rather than as parts of a cohesive whole. This disjointed approach not only undermines the development of the traits outlined in the Portrait of a Learner but also hinders the overall effectiveness of the educational system.

#### 7.3.1. Curricular Silos

One of the most significant challenges in education today is the existence of curricular silos. Traditionally, school curricula have been divided into distinct subjects, each taught in isolation from the others. Mathematics, science, literature, and history, for instance, are often treated as separate entities with

little to no overlap. This compartmentalization fails to reflect the interconnected nature of knowledge and the real world, where complex problems and scenarios require interdisciplinary thinking and a synthesis of multiple perspectives.

The rigid separation of subjects not only limits students' ability to make connections across disciplines but also restricts their capacity to develop into well-rounded individuals. For example, the rational problem-solving skills nurtured in science might remain untapped in humanities classes, while the creativity fostered in the arts could be disconnected from the analytical rigor required in math.

#### 7.3.2. Learning Environment Silos

Just as curriculum can be siloed, so too can learning environments. Traditional school designs often emphasize standardized, one-size-fits-all classrooms that prioritize uniformity over diversity in learning modalities. These spaces are typically designed for a specific, often teacher-centered, mode of instruction, leaving little room for the varied and dynamic ways that students learn.

Such environments do not support the diverse needs of learners as envisioned in the Portrait of a Learner. For instance, a student who thrives in a collaborative, hands-on setting may struggle in a traditional lecture-style classroom. Similarly, spaces designed for quiet, independent work may not accommodate students who learn best through discussion and group activities. The lack of diverse learning environments thus perpetuates the siloed nature of education, preventing students from fully engaging with the curriculum and realizing their potential.

#### 7.3.3. Co-curricular Silos

While recognized as valuable for student development, co-curricular activities, which include arts, sports, clubs, and community service, are often treated as add-ons rather than integral parts of the educational experience. They are frequently separated from the academic curriculum, leading to a disjointed educational experience.

This separation limits the ability of co-curricular activities to reinforce and complement the traits and competencies emphasized in the academic curriculum. For example, the teamwork and leadership skills developed in sports might not be explicitly connected to the collaborative practices encouraged in school projects. Similarly, the creativity fostered in an art club may not be linked to the innovative thinking promoted in science classes. Schools miss the opportunity to create a more cohesive and enriched educational experience by treating co-curricular activities as separate from academic learning.

#### 7.3.4. Support System Silos

School support systems, including counseling, social-emotional learning (SEL) programs, and academic interventions, are often isolated from the core educational process. While these systems are essential for addressing the diverse needs of students, they are frequently seen as peripheral to the "main" academic activities.

This siloing of support systems can result in missed opportunities for early intervention and holistic student development. For instance, a student struggling with anxiety might receive counseling services, but without integration with learning practices or SEL programs, the root causes of their anxiety related to academic stress may remain unaddressed. Similarly, academic interventions often focus solely on

improving grades or test scores, neglecting the broader developmental needs of the student, such as building resilience or fostering a growth mindset.

#### 7.3.5. The Impact of Siloed Practices

The existence of these silos in education not only fragments the learning experience but also prevents schools from fully realizing the vision outlined in the Portrait of a Learner. When curriculum, learning environments, co-curricular activities, and support systems operate in isolation, students are less likely to develop into balanced, respectful, rational, and innovative individuals. Instead, they may receive a piecemeal education that addresses only parts of their development, leaving critical aspects neglected.



**FIGURE 7.5** A Siloed Education System can be disorienting for the child. At a deeper level, such a system reinforces the false notion that the world is a fragmented place and makes the natural connections that exist everywhere (including between subjects) that much harder for children to see.

As we move forward in this chapter, we will explore how these silos can be broken down and integrated into a coherent learning ecosystem. By aligning all elements of the educational experience with the Portrait of a Learner, we can create a system that not only supports academic success but also fosters the holistic development of every student. This transition from silos to systems is essential for cultivating the well-rounded, capable individuals that our society needs.

# 7.4 Curricular and Co-Curricular Design

Curricular and co-curricular design are fundamental to creating a coherent educational system. These elements must work together to provide a balanced learning experience that supports the development of core competencies, builds capacity for both educators and students, and is guided by a clear learning matrix.

#### 7.4.1 Competencies: The Core of Learning

The core competencies that students must develop to thrive in an interconnected world are at the

heart of a coherent curriculum. There are three primary forms of learning—conceptual, competency, and character learning—often called the "3 Cs." These are not just academic skills but also the broader capacities students need to navigate and succeed in life.

**Conceptual Learning:** This involves deeply understanding key ideas and how they interrelate within and across disciplines. Students must be able to connect concepts across different subjects to build a comprehensive understanding of the world.

**Competency Learning:** This focuses on applying skills effectively in diverse contexts, ensuring that students can transfer what they have learned across different disciplines and real-world scenarios.

**Character Learning:** This emphasizes cultivating positive values and dispositions, such as empathy, integrity, and resilience, which are essential for human development.

These competencies are embedded in every aspect of the curriculum, ensuring that students not only gain knowledge but also develop the skills and character traits necessary for lifelong success.

#### 7.4.2 Capacity Building: Empowering Educators and Learners

Building capacity is essential for both educators and students. For educators, this involves developing the skills and knowledge necessary to implement a curriculum centered around the 3 Cs. For students, it means building their ability to take ownership of their learning and apply their competencies in real-world situations.

**Professional Development for Educators:** We advocate for continuous professional development that equips teachers with strategies to foster conceptual, competency, and character learning in their students. This includes training in inquiry-based learning, interdisciplinary teaching, and effective assessment methods.

**Empowering Students as Learners:** Students are encouraged to set goals, reflect on their progress, and adapt their strategies to overcome challenges. This empowerment is central to capacity building, ensuring that students are prepared to manage their own learning and navigate complex problems independently.

#### 7.4.3 The Learning Matrix: A Framework for Coherence

The Learning Matrix is a powerful tool for ensuring that curriculum, instruction, and assessment are all aligned with the competencies students need to develop. The matrix provides a clear, structured approach to mapping out learning goals and ensuring coherence across the educational experience.

**Mapping Competencies Across the Curriculum:** The Learning Matrix helps educators map out how competencies are developed across different subjects and grade levels. This ensures that learning builds progressively, with each stage of education reinforcing and expanding on what has been learned previously.

**Aligning Instruction and Assessment:** Instructional strategies and assessments are aligned with the competencies outlined in the Learning Matrix. This ensures that students are consistently developing and demonstrating their conceptual understanding, practical skills, and character strengths.

#### 7.4.4 Integration of Co-Curricular Activities: Enhancing the Curriculum

Co-curricular activities play a crucial role in reinforcing the competencies developed in the school. By integrating these activities into the curriculum, schools can provide students with additional opportunities to apply their learning in diverse contexts, thus deepening their understanding and skills.

**Linking Co-curricular to Competency Development:** Schools can design co-curricular programs that are directly linked to the development of core competencies. For example, participation in a debate club can enhance critical thinking, public speaking, and collaborative problem-solving—skills that are also nurtured in academic subjects.

**Encouraging Holistic Engagement:** Co-curricular activities should be accessible and appealing to all students, promoting a culture of holistic engagement. This ensures that students not only excel academically but also develop a well-rounded character and a strong sense of community.

#### 7.4.5 Practical Implementation: Steps to Align Curriculum and Co-curricular Design

Teachers and co-curricular program leaders should work together to design Collaborative integrated learning experiences that connect learning with co-curricular Planning activities. Utilizing the Schools should use the Learning Matrix to guide curriculum development, Learning Matrix ensuring alignment with the 3 Cs and progression across grade levels. Schools should offer continuous professional development to help educators Professional implement competency-based education and integrate co-curricular activities Development with academic goals. Schools should adopt flexible scheduling to allow for extended periods where interdisciplinary projects and co-curricular activities can take place without **Flexible Scheduling** time constraints. Regular assessment of both academic and co-curricular activities ensures Continuous that all aspects of the educational experience contribute to the development Assessment of the competencies outlined in the framework we have presented in this chapter.

To create a coherent learning experience, schools need to take several practical steps:

 Table 7.3 Steps to Align Curriculum and Co-Curricular Design.

By integrating these principles into curricular and co-curricular design, schools can move from a fragmented educational approach to one that is coherent and aligned with students' comprehensive development, preparing them to be balanced, engaged, and capable members of society.

## 7.5 Learning Environments: Creating Spaces That Support Coherence

Learning environments are foundational to the educational experience and play a crucial role in supporting the holistic development of learners. To foster coherence within the educational system, these environments must be thoughtfully designed to align with the goals outlined in the Portrait of a Learner and support the diverse modalities of learning identified by Education Design International

(EDI). These 20 modalities encompass the different ways in which students engage with learning, each requiring specific types of spaces that can adapt and evolve.

#### 7.5.1 Connecting Learning Environments to the Vision

The central framework of our educational vision emphasizes the importance of learning environments in achieving coherence. These environments should not only support the development of the competencies and traits outlined in the Portrait of a Learner but also accommodate 20 distinct modalities of learning as set forth below:

## THE 20 MODALITIES OF LEARNING

- 1. Independent Study
- 2. Peer-to-Peer Tutoring
- 3. One-on-one Learning with the Teacher
- 4. Lecture-Based Learning
- 5. Team Collaboration
- 6. Project-Based Learning
- 7. Distance Learning
- 8. Learning with Mobile Technology
- 9. Student Presentation
- 10. Internet-Based Research
- 11. Seminar-Style Instruction
- 12. Performance-Based Learning
- 13. Interdisciplinary Study
- 14. Naturalist Learning
- 15. Art-Based Learning
- 16. Social-Emotional Learning
- 17. Design-Based Learning
- 18. Storytelling
- 19. Team Learning and Teaching
- 20. Play and Movement Learning

Each modality reflects a different way in which students interact with knowledge, peers, and their environment.

# Supporting the 20 Modalities of Learning

To create truly effective learning environments, it's essential to consider the diverse ways in which students engage with content. The 20 modalities of learning can be grouped into several key categories:

#### 1. Individual Learning:



FIGURE 7.6 and FIGURE 7.7 Independent Study: Quiet, focused areas for self-directed learning.



FIGURE 7.8 and FIGURE 7.9 Reflective Learning: Spaces for introspection and personal growth.



FIGURE 7.10 and FIGURE 7.11 Technology-Enhanced Learning: Digital learning spaces that support personalized instruction.

#### 2. Collaborative Learning:



FIGURE 7.12 and FIGURE 7.13 Collaborative Learning: Open spaces that encourage teamwork and peer interaction.



FIGURE 7.14 and FIGURE 7.15 Peer Tutoring: Areas where students can mentor and learn from each other.



FIGURE 7.16 and FIGURE 7.17 One-on-One Learning: Intimate spaces for personalized instruction or mentoring.

#### 1. Experiential and Creative Learning:



FIGURE 7.18 Makerspaces: Hands-on environments for building, creating, and experimenting.



FIGURE 7.19 Performance-Based Learning: Spaces for drama, music, and other performance arts.



FIGURE 7.20 Play-Based Learning: Playful, engaging areas that support learning through play.

4. Outdoor and Environmental Learning:



FIGURE 7.21 Outdoor Learning: Natural environments that connect students with nature.



FIGURE 7.22 Physical Learning: Areas for movement, exercise, and physical wellness.



FIGURE 7.23 Service Learning: Spaces that connect education with community service.

5. Interdisciplinary and Real-World Learning:



FIGURE 7.24 Project-Based Learning: Spaces for long-term, interdisciplinary projects.



FIGURE 7.25 Inquiry-Based Learning: Environments that encourage curiosity and research.



FIGURE 7.26 Cultural Learning: Areas that promote global awareness and cultural understanding.

6. Social and Emotional Learning:



FIGURE 7.27 Social-Emotional Learning (SEL): Spaces that support emotional well-being and social skills.



FIGURE 7.28 Interpersonal Communication: Hubs for discussion, debate, and relationship-building.



FIGURE 7.29 Support Systems: Integrated areas for counseling, mentoring, and student support.

Each of these modalities requires a specific type of environment to thrive. For example, makerspaces should be equipped with workbenches, 3D printers, and ample materials storage to encourage creativity and innovation. In contrast, reflective learning areas might feature comfortable seating, quiet zones, and soft lighting to support introspection.

#### 7.5.2 Integration with Curricular and Co-curricular Design

Learning environments must be integrated with curricular and co-curricular activities to truly support educational coherence. This integration ensures that the physical spaces in which students learn are directly connected to what they are learning and how they are learning it, aligning with the broader educational goals.

#### Alignment with Curriculum:

Learning environments should be designed with the curriculum in mind, ensuring that they provide the necessary tools and settings for the activities outlined in the curriculum. For instance, a science lab should not only support experiments but also facilitate interdisciplinary projects that connect science with other subjects like math or environmental studies. This alignment helps to break down the silos between different disciplines, fostering a more cohesive learning experience.

#### Support for Co-curricular Activities:

Co-curricular activities, such as sports, arts, and community service, should not be isolated from the learning environments but integrated within them. For example, a school's theater space might serve both as a learning space for drama and a venue for extracurricular performances. Similarly, outdoor spaces might be used for both physical education classes and after-school sports programs. This integration ensures that co-curricular activities reinforce and complement the academic curriculum, contributing to the overall development of the learner.

#### 7.5.3 Creating a Coherent Educational Experience

The ultimate goal of designing learning environments is to create a coherent educational experience where all elements work in harmony to support students' holistic development. By aligning these spaces with curricular and co-curricular activities and ensuring they are designed with variety in mind, schools can move from a fragmented, siloed approach to a more integrated and effective educational system.

#### **Practical Implementation:**

In practice, this involves rethinking traditional classroom designs and creating a variety of distinct learning spaces, each tailored to specific activities such as independent study, group collaboration, or creative projects. This variety ensures that all spaces—both indoors and outdoors—are purpose-built to support different learning modalities. Schools should also consider the emotional and social aspects of learning, creating environments that not only facilitate academic success but also support students' well-being and personal growth.

In the next section, we will delve into how curricular and co-curricular design can be aligned to support this coherent approach further, building on the foundation established by well-designed learning environments.

## 7.6 Support Systems: Strengthening the Educational Ecosystem

Support systems are the backbone of a coherent educational ecosystem, providing the necessary

scaffolding to ensure that all students—regardless of their neurological profiles—can thrive academically, socially, and emotionally. In a coherent system, support systems are not peripheral but are fully integrated into the learning experience, aligning with curricular and co-curricular activities to promote the holistic development of every learner. This section explores how support systems, designed with neuroinclusion and neuroarchitecture principles, can reinforce the core competencies, character, and capacities developed through the curriculum and co-curricular activities.

#### 7.6.1 The Role of Support Systems in a Coherent Learning Ecosystem

Support systems encompass a wide range of services designed to meet the diverse needs of students. These include counseling, mentoring, SEL programs, academic interventions, and health and wellness services. In a coherent educational system, these support systems work in harmony with the curriculum to create a nurturing environment that addresses the whole child.

#### Integration with Learning and Curriculum

Support systems must be fully integrated with both curricular and co-curricular activities to create a seamless learning experience. For example, SEL programs should be embedded into the daily curriculum, reinforcing character and competency development. Counseling services should be aligned with academic and co-curricular goals, helping students navigate challenges and build resilience.

#### **Neuroinclusion in Support Systems**

Neuroinclusion ensures that support systems cater to students' diverse neurological profiles. This involves creating spaces and services that accommodate different ways of learning, processing information, and managing emotional and social challenges. By integrating principles of neuroarchitecture, such as appropriate lighting, acoustics, and spatial organization, schools can create environments that are inclusive, supportive, and conducive to learning for all students.

#### **Sensitivity in Support Provision**

While well-intentioned, support services can sometimes inadvertently label children as "special" or "different," leading to feelings of incompetence or social isolation. To avoid this, schools should treat every child as unique, with personalized and self-directed learning paths that are naturally inclusive. By normalizing diversity and embedding support within the regular learning environment, schools can help all students thrive without the stigma of being labeled.

#### 7.6.2 Social-Emotional Learning (SEL): A Cornerstone of Coherence

Social-emotional learning is a key component of a coherent educational system, directly supporting the development of the character traits outlined in the Portrait of a Learner. SEL programs teach students essential skills such as empathy, self-regulation, communication, and problem-solving, which are critical for both personal and academic success.

#### **Embedding SEL in the Curriculum**

To create coherence, SEL should not be treated as an add-on but integrated into all aspects of the curriculum. Lessons on empathy and collaboration can be woven into group projects and discussions,

while self-regulation strategies can be taught alongside academic content. By making SEL a core part of the educational experience, schools help students develop the emotional intelligence needed to navigate complex social situations and build positive relationships.

#### Aligning SEL with Competencies and Character Development

SEL programs should align with the competencies and character traits emphasized in the curriculum. This ensures that students are not only learning academic content but also developing the personal qualities that will help them succeed in life. For example, a focus on communication skills in SEL can complement competency development in language arts, while lessons on integrity and responsibility reinforce character education initiatives.

#### 7.6.3 Academic and Behavioral Interventions: Supporting All Learners

Academic and behavioral interventions are essential for ensuring that all students have the opportunity to succeed. These interventions provide targeted support for students who may be struggling academically or behaviourally, helping them stay on track and achieve their learning goals.

#### **Neuroinclusive Interventions**

Academic and behavioral interventions should be designed with neuroinclusion in mind, providing tailored support that considers the diverse ways students learn and process information. For example, students with attention difficulties might benefit from shorter, more focused instructional sessions, while those with anxiety might need a calming environment with reduced sensory input. By designing neuroinclusive interventions, schools can ensure that all students receive the support they need to succeed.

#### **Early Identification and Intervention**

Early identification of students who need additional support is crucial for effective intervention. Schools should use data-driven approaches to monitor student progress and identify those who may be at risk of falling behind. Once identified, students should receive tailored interventions that address their specific needs, whether they involve academic tutoring, behavioral coaching, or social-emotional support.

#### **Aligning Interventions with Learning Goals**

Interventions should be closely aligned with the learning goals outlined in the curriculum. This ensures that students receive support relevant to their academic and personal development. For example, a student struggling with reading comprehension might receive targeted literacy support that also reinforces their competency in critical thinking and analysis.

#### 7.6.4 Health and Wellness: A Holistic Approach to Student Well-being

Health and wellness are fundamental to a coherent educational system, directly impacting a student's ability to learn and thrive. Schools must take a holistic approach to student well-being, providing services that address both physical and mental health.

#### Health Services and Neuroinclusive Design

Schools should offer comprehensive health services, including physical health care, nutrition education, and mental health support, all designed with neuroinclusive principles in mind. For example, quiet, private spaces for counseling can help students who are easily overwhelmed by sensory stimuli. Health education should be a vital component of the curriculum, teaching students about physical fitness, healthy eating, and mental well-being.

#### **Promoting a Balanced Lifestyle**

Promoting a balanced lifestyle is essential for student well-being. Schools should encourage students to engage in physical activity, practice mindfulness, and maintain a healthy work-life balance. By promoting healthy habits, schools help students develop the resilience and self-care skills needed to succeed both academically and personally.

#### 7.6.5 Practical Implementation: Creating Coherent and Neuroinclusive Support Systems

Creating a coherent and neuroinclusive system of support requires careful planning and collaboration among educators, administrators, and support staff. Schools can take several practical steps to integrate support systems into the broader educational ecosystem:

**1. Collaborative Planning:** Establish teams that include educators, counselors, and support staff to plan and implement integrated support services that align with the curriculum and co-curricular activities.

**2. Professional Development:** Provide ongoing professional development for educators and support staff to ensure they have the skills and knowledge needed to deliver effective, neuroinclusive support services.

**3. Community Partnerships:** Enhance support systems by partnering with community organizations that provide additional resources and services, such as mental health counseling, nutrition programs, and after-school activities.

By integrating these neuroinclusive support systems into the broader educational ecosystem, schools can create a coherent learning environment that addresses the whole child, ensuring that all students can succeed academically, socially, and emotionally.

## 7.7 Implementing Coherence: A Comprehensive Strategy

Transitioning from a fragmented educational system to one that is coherent and integrated requires a strategic, structured approach that addresses both broad vision and detailed execution. The 5D Approach (define, design, diversify, deliver, demonstrate) set forth below provides a robust framework for guiding this transformation. However, to fully realize this coherence, it is essential to consider how these systems and environments can support students' overall well-being and holistic development.



**FIGURE 7.30** The 5D Approach (define, design, diversify, deliver, demonstrate) provides a robust framework for guiding this transformation.

## 1. DEFINE: Establishing a Strategic Vision and Framework

The foundation of coherence lies in defining learning. Schools must establish a clear, shared vision that integrates all elements of the educational ecosystem. This vision should align with the "Portrait of a Learner" and the core competencies—conceptual, competency, and character learning—while embedding a commitment to student well-being at every level.

**Collaborative Vision Development:** Establish a cross-functional team that includes educators, administrators, students, and parents to lead the coherence initiative. This ensures shared ownership and alignment with the educational goals.

**Phased Implementation Plan:** Develop a strategic plan that outlines clear goals, timelines, and mechanisms for feedback and adjustment, allowing for gradual adoption across the school community. This plan should also support practices that nurture both academic and personal growth.

## 2. DESIGN: Crafting an Integrated Curriculum and Purpose-Built Environments

Designing a coherent educational system requires determining what's worth learning and ensuring that the curriculum and learning environments reflect these priorities. This involves crafting an integrated curriculum and purpose-built spaces that support the well-being and learning needs of all students.

**Curriculum Mapping:** Utilize the Learning Matrix to map competencies across subjects and grade levels, ensuring a coherent and progressive learning journey for students.

**Purpose-Built Learning Environments:** Design spaces that are diverse and conducive to various learning modalities, incorporating elements that support the well-being and comfort of all learners, such as flexible spaces that cater to different activities and moods.

### 3. DIVERSIFY: Ensuring Inclusive and Varied Learning Experiences

To ensure that everyone can access learning, diversity in learning experiences is essential. This step focuses on creating multiple pathways for students to engage with the curriculum in ways that are inclusive and reflective of their individual learning styles and needs.

**Differentiated Instruction:** Implement instructional strategies that cater to diverse learning styles, using interdisciplinary project-based learning approaches that encourage critical thinking and practical application. These strategies should be designed to support not just academic outcomes but also the holistic development of students.

**Inclusive Learning Experiences:** Ensure that these learning experiences contribute to students' overall development, helping them to grow in ways that extend beyond academics.

# **4. DELIVER:** Implementing Coherent Teaching Practices and Professional Development

Building strong learning cultures requires that teaching practices are aligned with the coherence framework and supported through ongoing professional development. This ensures that educators are equipped to foster a culture that supports both academic and holistic development.

**Consistent Instructional Practices:** Align teaching methods with the defined learning goals, ensuring that all practices—from learning space activities to assessments—reinforce the integrated curriculum and competencies.

**Ongoing Professional Development:** Focus on continuous learning for educators through professional learning communities (PLCs), targeted training on interdisciplinary teaching methods, SEL integration, and mentorship programs. Educators should be equipped to support not just academic outcomes but also the holistic development of their students.

## 5. DEMONSTRATE: Assessing and Reflecting on Learning Outcomes

Assessment and reflection are critical to providing evidence of learning. Implementing a balanced assessment system and encouraging reflective practices help ensure that learning goals are being met and guide both teaching and student growth.

**Balanced Assessment System:** Implement a system that includes both formative and summative assessments aligned with the competencies and character traits defined in the curriculum. This system should provide feedback that helps guide both teaching and learning toward greater coherence and student growth.

**Reflective Practice:** Encourage reflective practices that consider how well the learning environment and curriculum are fostering both academic achievement and the broader development of students.

### Integrating Support Systems into the Learning Ecosystem

Support systems are integral to a coherent educational environment. They must be fully integrated with the curriculum and co-curricular activities to support every student's personal development.

**Holistic Health as the Foundation of Support Systems:** Support systems should actively promote physical, emotional, mental, and social well-being. This approach shifts the focus from reactive interventions to proactive strategies that nurture well-being and resilience at every level.

**Coordinated Student Support:** Develop a collaborative approach that involves counselors, learning specialists, and health professionals to provide tailored interventions that address academic, behavioral, and social-emotional needs. Support systems should be seamlessly woven into the daily fabric of school life, enhancing students' overall experience.

**Sensitivity in Support Provision:** Schools must be sensitive to how support is framed and delivered to avoid unintentionally labeling or stigmatizing students. Personalized, self-directed learning paths that are inclusive and normalize diversity can help mitigate these risks, ensuring that every student feels valued and supported.

**Early Identification and Intervention:** Implement strategies for early identification of students who need additional support, ensuring that interventions are proactive and aligned with the learning goals. This includes integrating neuroinclusive practices into both the curriculum and support systems.

# 7.8 Conclusion: A Unified Vision for All Stakeholders

As we conclude this chapter, we must revisit the central themes that have guided our exploration of coherence in education. Throughout the chapter, we have emphasized the importance of moving away from fragmented, siloed approaches and toward a more integrated and cohesive educational system. This shift is not merely about improving academic outcomes; it is about creating an environment where every student can thrive—academically, socially, and emotionally.

#### **Revisiting the Core Concepts**

At the heart of this chapter is the idea that coherence in education is achieved by aligning all elements of the learning ecosystem: learning environments, curricular and co-curricular design, support systems, and the holistic development of the learner. We have explored how:

**Learning Environments** must be diverse, with various purpose-built spaces designed to support a wide range of learning modalities, including those informed by neuroinclusion principles. These environments are not just physical spaces but are integral to the learning process, shaping how students interact with content, peers, and educators.

**Curricular and Co-curricular Design** should be interconnected, ensuring that the skills and competencies developed in the school are reinforced through real-world applications and activities. Integrating the Learning Matrix and focusing on the 3 Cs—conceptual, competency, and character learning—are vital for creating a coherent educational experience.

**Support Systems** are crucial for addressing the diverse needs of students. By incorporating neuroinclusion, social-emotional learning (SEL), and targeted academic interventions, support systems can ensure that every student receives the help they need to succeed.

#### The Impact of Coherence on Student Outcomes

A coherent educational system has a profound impact on student outcomes. When all elements of the learning ecosystem are aligned, students are more likely to achieve academic success, develop strong social-emotional skills, and grow into well-rounded individuals who are prepared to navigate the complexities of the modern world. Coherence fosters a learning environment where students feel supported, valued, and motivated to engage deeply with their education.

Creating and sustaining a coherent educational system requires the active participation of all stakeholders—educators, administrators, parents, students, and the broader community. It is a collaborative effort that demands ongoing reflection, adaptation, and commitment to the shared goal of nurturing the whole child. As we move forward, let us commit to breaking down the silos that have traditionally fragmented education and work together to build a more integrated and effective learning ecosystem.

#### Looking Ahead

The journey toward coherence is ongoing. It is not a one-time effort but a continuous process of refinement and improvement. As the educational landscape evolves, so too must our approaches to coherence. By remaining flexible, responsive, and dedicated to the principles discussed in this chapter, we can ensure that our educational systems continue to meet the needs of all students, preparing them for the challenges and opportunities of the future.

# 





# LEARNING SPACES DESIGNED FOR CONNECTION & COHERENCE

The following pages present a variety of case studies that illustrate the application of the principles presented throughout this book. The theme of these case studies is "connection." Each selected example highlights a specific kind of connection, and taken together, this section of the book provides a holistic view of school design inspired by the need to connect students with themselves, with their peers, and with the built and natural environment around them.



FIGURE 8.1 Connecting to the Environment—Rendering of Sankore International School in Kenya, Designed by Education Design International.

# 8.1 Fixing Corridors That Disconnect

A true irony is that the primary "connector" in school buildings, the ubiquitous corridor, disconnects students from themselves, from each other and from the environment. In the next few pages and throughout this book, we have shown how these critical connections can be restored and how learning spaces can function far more effectively when corridors are eliminated or repurposed for learning. A collateral benefit of eliminating the single-purpose corridor is that the area available for teaching and learning can be increased by up to 30%—which is the area that corridors can use up.



FIGURE 8.2 This unusually wide doubleloaded corridor at Hillel Academy in Tampa took up almost 35% of the elementary school building area. It was barely used other than to serve as the primary means to get into each classroom.



**FIGURE 8.3** All 35% of the space was made available for teaching and learning with a few small fixes. The corridor walls were replaced with sliding glass doors, the carpet was replaced, walls painted, and some new furniture added. These changes transformed the corridor into a true connector of spaces, people and activities.



**FIGURE 8.4** At Hillel Academy, the middle school corridor was different from the elementary school featured on the previous page in that it was lined with lockers that the students valued. Even with this added utility, it made no sense to devote 35% of the overall built space in the building to the corridor.



**FIGURE 8.5** This image shows how the corridor was reimagined as a teaching and learning space with all the work completed over six weeks during the summer. The new space also has several connections to the adjacent classrooms repurposed to serve as multi-use learning studios. The school had a covered area outside the building near the restrooms where the lockers were relocated. This kind of solution will only work if the corridor is not needed as a fire-rated exit from the building.

Despite being located on a pristine, lushly landscaped campus, the American Embassy School's school buildings, in New Delhi, India, had started to show their age. Particularly concerning for the school was the disconnect between the "cells and bells" design of its old buildings and its philosophy of encouraging students to engage with each other, their teachers, and their community to explore, connect, and make a difference. The renovations to their elementary school were carried out specifically to address this disconnect between the school's education philosophy and facilities.



FIGURE 8.6 One of the biggest problems with the old design was how classrooms were fed off this large corridor with little utility beyond storage. So, the first order of business was to eliminate these hallways altogether and capture all the extra space thus obtained for teaching and learning.



FIGURE 8.7 and FIGURE 8.8 As these two "after" pictures show, the new learning spaces created with the removal of the hallway now allow for many more learning modalities than were possible in the old classrooms. Rooms are also brighter with more daylight, and the introduction of biophilic design connects students with nature even when they are indoors.



Most existing school buildings, especially those created before the year 2000, have a lot of wasted hallway space. By some calculations, hallways can use up to 30% of the available space, leaving only 70% for teaching and learning. Sometimes, hallway walls are removed to eliminate the single-purpose corridor. In other cases, as with Excel Academy in Land O' Lakes, Florida, the hallways were left in place and furnished to make them usable all day. This solution will only work when the hallway is not a legally required fire exit.



FIGURE 8.9 This is what the hallway looked like before the summer work—lots of empty space barely used for most of the school day.



**FIGURE 8.10** This design was created so that the hallway becomes fully usable for various learning modalities, including group projects and individual study, while still leaving enough room for it to function as a movement corridor.

The American School of Bombay was housed in an old building originally designed as a hostel. Rooms were small, many had no windows, and classrooms were aligned along narrow walkways and corridors. The building was the antithesis of a connected environment. Over the course of a short-term renovation, most of these problems were addressed, as the before-and-after pictures illustrate.



FIGURE 8.11 This before picture shows classrooms along a narrow, un-air-conditioned corridor overlooking the central atrium.



**FIGURE 8.12** The renovation closed in the hallway and used existing niches to create these small collaborative areas. What used to be a hallway now functions more like a social zone, but the breakout areas are small enough that they also serve as places for individual work and reflection. By closing in the space, it was able to be air-conditioned. Ample glass continues to bring in daylight and visually connects the newly created social space to the large central atrium.

# 8.2 Connecting For Collaboration

A big problem with the old building at the American School of Bombay was the extent to which classrooms were isolated from each other, preventing the kinds of essential connections that are crucial for effective connections between students. Teachers were also trapped in these boxes with few opportunities for spontaneous interaction with their fellow professionals.



**FIGURE 8.13** This image shows a typical classroom before the renovation. Rooms were reasonably well furnished, but they were small and cramped and isolated both teachers and students from the rest of their community.



**FIGURE 8.14** Although the rooms themselves were not enlarged, the opening of classrooms to each other makes them function like learning suites and allows teachers and students to collaborate more. Team teaching and multidisciplinary assignments are now easier to conduct in this space.



**FIGURE 8.15** Merely connecting classrooms has its own benefits, as shown above. The renovation at this school took the idea further by also connecting classrooms to a large common space for a variety of activities that wouldn't be possible in the learning studios. Notice how the sliding doors to the commons and between classrooms have utility beyond serving as mere partitions.

# 8.3 Connecting for Flow

The educators at Col.legi Montserrat in Barcelona faced a big challenge. They needed to transform the upper floor of a 100-year-old building that had been functioning with traditional classrooms and corridors into a modern learning space. They wanted children to have greater freedom of movement. In other words, they wanted children and activities to "flow" smoothly through the entire learning space.



**FIGURE 8.16** This is the historic Col.legi Montserrat, in Barcelona, Spain, building that the school was looking to renovate to better meet the needs of their early childhood population.



FIGURE 8.17 This image of one of their classrooms is typical of what was in place before the renovation.



**FIGURE 8.18** This is a photo of the same space taken after the renovation. Notice that the traditional classrooms are gone, and in their place, we have an ample central space with multiple activity centers. A low curvilinear partition separates activities while keeping children connected to their larger environment.


FIGURE 8.19 The design for Col.legi Montserrat envisioned a series of spaces that flow seamlessly from one to the other. These spaces were designed into three distinct thematic zones—FOREST, MOUNTAIN, and OCEAN.





#### FIGURE 8.20 and FIGURE 8.21

"Flow" facilitates autonomy for students, enabling them to transition seamlessly from activity to activity—be they more active ones or those where they can retreat to quiet zones as these images illustrate.

# 8.4 Connecting to Self

Connection to self is an often-ignored need in school design. While the need for collaboration is well recognized and schools are starting to create opportunities for students to collaborate in pairs or teams, it is not as common for school designs to intentionally create areas for students to retreat from the crowd to be by themselves. This kind of alone time is critically important during the hustle and bustle of the school day. It gives students an opportunity to internalize and synthesize their learning and, equally important, it gives them moments to reflect and restore themselves mentally and emotionally.





FIGURE 8.22, FIGURE 8.23, and FIGURE 8.24 Each of these images shows aspects of alone time. It is not so important what children are doing other than that they should be in an environment that is calm, peaceful, uncluttered, comfortable, and, preferably, daylit and with direct or visual connections to the outdoors.



## 8.5 Connecting to the Environment

Children's connection with the environment, encompassing natural, built, and cultural aspects, significantly influences their cognitive, emotional, and social development. This connection is not merely about the physical presence of elements but about how these elements interact with children to enhance their well-being and preparedness for learning.



**FIGURE 8.25** Sinarmas World Academy , in South Tangerang, Indonesia, introduces many Indigenous elements, like tropical greenery and koi ponds, to connect students to the natural environment.



FIGURE 8.26 The green amphitheater at Swarthmore College, in Pennsylvania, below is another wonderful example of a highly functional learning space that connects students with nature and the environment.



**FIGURE 8.27** This early childhood space at Anne Frank Inspire Academy in San Antonio, Texas, is characterized by bright colors, warm, natural flooring, ample daylight, comfortable, ergonomic furnishings, and direct connections to outdoor play. It is also designed with lots of storage to reduce clutter—all essential elements to increase children's connection with their environment.



**FIGURE 8.28** Little touches like child-sized doors signal that this world is as much about children as it is about the adults who care for them. Such details help connect children to their environment in a positive way.

## 8.6 New Connections with Old Spaces

Excel Christian Academy in Land O' Lakes, Florida, is a small school that has experienced rapid growth over the past few years. The building they were housed in was in dire need of an upgrade, and their growing population required both quick and long-term solutions. The projects that emerged were the result of a facilities master plan to be implemented over five years. However, in early 2024, the school realized it needed to quickly find space for at least 50 students to address their long waiting list. Since this timeframe wouldn't give them time for a conventional addition, they elected to do a summer "pathfinder" that is described on this and the next page.



#### **Example Pathfinder Project**

FIGURE 8.29 and 8.30 The space shortage problem was solved by eliminating one windowless 600 sq. ft. library and capturing an additional 1,700 sq. ft. of unused hallway space. The new design (duplicated on an upper floor) for an innovation lab was completed over the summer. It increased the school's capacity by up to 75 students with very little construction and a highly constrained budget.



# **Example Pathfinder Project**

Pathfinder projects like the one featured here are "low-cost, high-impact" solutions. They serve many functions, but their main purpose is to showcase the delivery of a new curriculum with new pedagogies in a space tailored to meet the demands of modern education. Their effectiveness is measured using several metrics. Pathfinders become the catalyst for more ambitious whole-school improvements.



FIGURE 8.31 This is the 600 sq. ft. windowless room whose walls were removed to become part of a much larger, more open space.



**FIGURE 8.32** The design solved the school's immediate need for space and provided an innovation lab with a modern learning environment. This unique space has features like collaborative work areas, soft seating, easy access to technology, connections to the outdoors, and excellent daylighting. These are the kinds of learning spaces that the school hopes to see more of when its master plan is implemented.

Francis Xavier Ward (FXW) is a highly reputed private Catholic school located in Downtown Chicago. Despite their excellent reputation, the facilities at the two FXW campuses have fallen behind the times, and the school commissioned the preparation of a master plan to develop a phased approach for the improvements that will be needed over the next decade. Featured here are two low-budget "pathfinder" projects that kicked off the school's efforts to bring its campus in sync with its educational vision of a "community committed to innovative education."



FIGURE 8.33 and FIGURE 8.34 This rendered floor plan shows the conversion of a traditional existing library at the school's OSP campus into a multi-faceted innovation center without the need for construction. The space is divided into various activity centers. One room is set up like a glass bubble for activities like group reading and storytelling that is acoustically separated from the other activities. Below is a rendered version of the new innovation center.





**FIGURE 8.35 and FIGURE 8.36** One of the key deficiencies of the existing Francis Xavier Warde Holy Names campus in Chicago was the lack of social space—an element that is particularly important for middle school children. During master planning, the team observed the space (top photo) that was adjacent to the cafeteria but used exclusively for table storage. As with the innovation center at the school's OSP campus (previous page), this space was transformed into a student lounge over the summer break with only fittings, finishings, technology, and furniture and no construction other than the replacement of the existing lighting and the addition of sliding glass doors.



## 8.7 Outdoor Connections

Excel Christian Academy was located on a reasonably sized property but needed more dedicated outdoor activities and play areas.



**FIGURE 8.37 and FIGURE 8.38** These renderings show how the space between the existing school and a proposed gym addition would be utilized for outdoor learning. The advantage of a large central courtyard like this is that it can be easily supervised, is safer, and tends to be shaded during most of the school day.



Most schools make a clear distinction between what they consider "learning," which tends to happen inside, and "play," which happens outside, usually during recess. The idea of making the outdoors an integral part of the school day with the learning activities there on an equal or even superior footing to what happens inside is still foreign to the idea of schooling. On this and the following pages, we have provided several examples that show the use of outdoor spaces for activities beyond traditional play: although the very act of placing these learning activities outdoors makes them more "playful" and enjoyable than if they had been indoors.



FIGURE 8.39 At the Learning Gate Community School in Lutz, Florida, this setting offers a compelling activity where children have nature views, shade and breathe fresh air. A drum circle like this one teaches a skill while keeping students active and engaged. This is much preferred to just taking a "class" outside so students can be lectured to.



**FIGURE 8.40** Socializing during mealtimes is a normal human activity. Outdoor cafés are a good way to get children outside. This is especially true in places where the weather is pleasant. This outdoor café at Corbett Prep in Tampa shows a low-cost way to provide a high-quality experience for students.

Despite its location in Florida where daylight and fresh air are abundant, this old school building at Hillel Academy in Tampa had small windows that limited the amount of daylight and fresh air and prevented students from looking out. In other words, the building effectively cut off all connections to the outdoors.



**FIGURE 8.41** As this photo of a typical classroom before the renovation shows, even though all rooms had doors to go outside, these could not be used when class was in session because students going out would lead to a lack of adult supervision.



**FIGURE 8.42** The renovation solved the above problems with a simple fix. Walls to the outside were opened up with large operable windows and sliding doors that brought in lots of daylight and fresh air. An inexpensive deck, outdoor furniture, and a chess set means that students are no longer trapped inside.



**FIGURE 8.43** There will be situations where extreme heat or cold makes it impossible to enjoy the outdoors. In such situations, bring the outdoors inside, as shown in this design for Istanbul International Community School. A central atrium with abundant daylight and lots of greenery can become a wonderful student commons.



FIGURE 8.44 This veranda adjacent to the art room at DSB International School in Mumbai, India, set in a dense urban area, shows that outdoor learning in a green setting is possible almost anywhere with some imaginative design.

### 8.8 Connecting Teachers with their Peers

There is definitive research showing that teacher collaboration is a critical factor in student achievement. Unfortunately, most teachers are "stuck" in classrooms with few opportunities to collaborate with their peers. While teachers do get to meet at lunchtime and during teacher prep periods, such interactions don't represent the kind of ongoing, spontaneous communications that can and should happen throughout the school day.



**FIGURE 8.45** This is what a typical classroom at Hillel Academy in Tampa looked like before the renovation. Teachers worked individually in their own classrooms with few opportunities to collaborate with their peers. Small windows and closed blinds kept out daylight and disconnected rooms from the outside.



**FIGURE 8.46** The renovation improved student-to-student connection, teacher collaboration, and connections to the outdoors.

Teachers need to be treated like the professionals that they are. They need a well-equipped professional workspace where they can interact with their colleagues, discuss challenges they may be facing with particular students, develop multidisciplinary projects, get a snack if they need to, and make important phone calls. Such work areas also serve to bring teachers together in a social context and help build strong personal connections in ways that would be more difficult when they don't get an opportunity to work side-by-side with their peers.



**FIGURE 8.47** This professional office for middle school teachers at Hillel Academy of Tampa Bay was created in one of the school's underused classrooms. The renovation opened the room to the outside to bring in daylight and fresh air and has transparent glass openings to student breakout areas for passive supervision.



**FIGURE 8.48** At P.K. Yonge Developmental Research School in Gainesville, Florida, teachers were provided with a collaborative, professional workspace they humorously labeled the "Fishbowl." Here they can work relatively undisturbed while still maintaining passive supervision of the adjacent student commons.

## 8.9 Connecting with Transcendence

Self-transcendence is defined as the act of rising above the ordinary limits of the self, often associated with spirituality and the search for meaning. For a space on a school campus to serve as a proper setting for transcendence, it must evoke a sense of awe. We can imagine such feelings that bring us beyond ourselves when we are in an ancient cathedral, a historic art museum, or a beautiful natural setting like a waterfall. Such environments are more difficult but not impossible to create on a school campus, as some of the following examples illustrate.



**FIGURE 8.49** This treehouse by the world-renowned treehouse master Pete Nelson makes an otherwise nondescript campus at Anne Frank Inspire Academy (AFIA) in San Antonio, TX, special. It is such an unexpected visual and experiential departure from the norm that it has the potential to help children transcend "above the ordinary limits of the self."



**FIGURE 8.50** This central plaza at AFIA uses many ways to connect students to their environment through the use of color, comfortable furniture, the use of natural wood, locally sourced building materials like limestone, and the introduction of ample daylight and nature views. It serves as the heart of the school and is an awe-inspiring space—exactly the right conditions for transcendence.

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Dr. Parul Minhas is a distinguished author, educator, and the Director of Research and Digital Innovation at Education Design International (EDI). With a passion for reimagining educational environments, she has co-authored influential works with visionary school architect Prakash Nair, including the groundbreaking book *A New Language of School Design*. Her contributions have significantly shaped the industry's understanding of school design, advocating for spaces that truly support children's well-being and development.

Her commitment to children's well-being and educational environments deepened with the birth of her son. Watching him navigate his early years and discover the world around him became a meaningful source of inspiration, fueling her dedication to creating healthier, more nurturing learning spaces for all children. Dr. Minhas' research delves into salutogenic design, neuroarchitecture, health-promoting school environments, and biophilic learning spaces, reflecting her passion for fostering integrated health and educational innovation. She has authored various white papers on these subjects, further establishing her expertise in the field.

Beyond her research, Dr. Minhas has developed comprehensive design guidelines and assessment tools, which architects use to create educational facilities that enhance children's overall health. She also leads EDI's digital innovation efforts, managing a suite of technology tools like SPACE, PATH, and EduSPACE, revolutionizing how educational spaces are designed and utilized.

With years of experience teaching architecture, Dr. Minhas brings a unique perspective as a research architect, educator, author, content creator, and conscious parent. Her multifaceted expertise and compassionate approach drive her to make a lasting impact on the future of educational design and children's well-being.

A sought-after speaker at national and international conferences, Dr. Minhas shares her groundbreaking insights with a global audience. She also leads EDI's strategic communications, ensuring their pioneering initiatives resonate worldwide.

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Prakash Nair is a globally acclaimed architect and educator, who specializes in the design of innovative schools that prioritize student-centered learning. As the Founding President & CEO of Education Design International (EDI), Prakash has led the firm to become a leader in integrating research-driven innovations into school architecture with studios worldwide.

With a career spanning over 23 years, Prakash has worked

with schools in 58 countries across six continents, bringing a rich diversity of global insights to his work. This extensive international experience has profoundly shaped his approach to educational architecture, where he champions the principle of "Well-being for Learning," focusing on enhancing children's health and well-being in school environments.

Prakash's journey in educational architecture began with a significant role as Director of Operations for New York City's multibillion-dollar school construction program, where he honed his skills for a decade before establishing his private practice. His expertise in architecture, education, neuroscience, psychology, and child development has driven EDI to the forefront of the industry.

A prolific author, Prakash has penned several influential works, including A New Language of School Design, Learning by Design: Live | Play | Engage | Create, The Language of School Design, and Blueprint for Tomorrow: Redesigning Schools for Student-Centered Learning, published by Harvard Education Press. His scholarly contributions extend to numerous articles in reputed journals and white papers on neuroscience, biophilic design, and outdoor learning.

Prakash's impact as an educator is far-reaching, with his contributions to Harvard's edX "Leaders of Learning" course influencing over 280,000 participants worldwide. He is a sought-after keynote speaker at international education conferences and has delivered a TEDx talk, further establishing his position as a preeminent figure in innovative school design. Under Prakash's leadership, EDI has developed a unique suite of apps designed to enhance learning environments, an innovation that earned him the prestigious Kelly Tanner Award by A4LE in 2023. His numerous international accolades include the A4LE MacConnell Award, the highest honor worldwide for school design.

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Kevin Bartlett is a highly respected educator and leader with a distinguished career spanning multiple continents. As the Founding Director of the Common Ground Collaborative, Kevin has been at the forefront of educational innovation, championing the development of cohesive and effective learning systems worldwide.

Kevin's extensive experience includes leadership positions in the UK, Tanzania, Namibia, Austria, and Belgium. Most notably, he served as Director of the International School of Brussels from 2001 to 2015, where his visionary leadership left a lasting impact on the school community.

A pioneer in the field of accreditation, Kevin has co-designed accreditation systems for the European Council of International Schools (ECIS), the Council of International Schools (CIS), and the New England Association of Schools and Colleges (NEAS&C). He is currently engaged with a small team in developing ACE, an innovative new accreditation protocol for NEAS&C, reflecting his ongoing commitment to enhancing educational standards globally.

Kevin is also a prolific writer and sought-after speaker. He regularly contributes articles on a wide range of educational topics and leads workshops at international and national conferences. His expertise as a curriculum designer is widely recognized, having initiated and led the International Baccalaureate (IB) Primary Years Programme.

In addition to his work with the Common Ground Collaborative, Kevin serves as the Director of Education at Education Design International (EDI), where he continues to influence and shape the future of education through his leadership and deep understanding of curriculum design and educational accreditation.

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# **ABOUT A4LE**

The Association for Learning Environments (A4LE) is a global non-profit organization dedicated to improving and transforming the places where children learn. Founded in 1921 as the National Council on Schoolhouse Construction and later renamed to reflect its broader mission, A4LE serves thousands of professionals working in various facets of education, design, and construction.

The association believes that well-designed learning environments can greatly impact student success and teacher effectiveness. To that end, A4LE offers professional development, research initiatives, and opportunities for collaboration among architects, planners, educators, and administrators.

By fostering an interdisciplinary dialogue, A4LE aims to create innovative, sustainable, and enriching learning environments that cater to the evolving needs of students and educators around the world.

#### ARCHITECTURE | EDUCATION REFORM | SCHOOL DESIGN \$35

Building Minds: Designing Learning Spaces for Connection & Coherence advocates for a transformative approach to education, emphasizing environments that are not merely places of learning but vibrant spaces that foster connection and engagement. Each chapter offers practical solutions grounded in interdisciplinary research to guide educators, architects, and policymakers in creating more effective, humane, and transformative learning environments.

#### **AUTHORS**



**Dr. Parul Minhas** is the Director of Research and Digital Innovation at Education Design International (EDI). She stands out for her pioneering work in the design of learning environments that actively promote student health and well-being. Parul is the creative force behind the design of various EDI APPS that focus on educational excellence. She collaborates with Prakash Nair on transformative research in school design. Her groundbreaking work and keynote presentations on neuroarchitecture and biophilic design have garnered worldwide attention.



**Prakash Nair, AIA** is a futurist, a visionary architect and the Founding President & CEO of Education Design International, a company with consultations in 58 countries on six continents. He is the recipient of many international awards including the A4LE MacConnell Award, the highest honor worldwide for school design. He has written extensively in leading international journals and is the author of three books including the landmark publication "Blueprint for Tomorrow: Redesigning Schools for Student-Centered Learning" published by Harvard Education Press.



**Kevin Bartlett** is the Founding Director of the Common Ground Collaborative and Director of Education at EDI. He has held leadership positions in the UK, Tanzania, Namibia, Austria, and Belgium, where he was most recently Director of the International School of Brussels from 2001-2015. Kevin is a regular author of articles on a range of topics and a keynoter/workshop leader at multiple international and national conferences. He is a writer and trainer in curriculum design and leadership for learning for the Principals' Training Center. As a curriculum designer, he initiated and led the IB Primary Years Programme.



The Association for Learning Environments is a professional non-profit association whose sole mission is improving the places where children learn.

