eHandbook:

Innovative & Sustainable Learning Environments that Foster Quality, Equity, and Inclusion

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Figure 1. Large windows provide daylight and outdoor views- Kottby lågstadieskola ©MultiLED

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Introduction to ISLE eHandbook

This eHandbook was created as part of the European Union funded Collaborative Learning Communities for Redesigning Primary Education Towards Innovative & Sustainable Learning Environments (ISLE) Erasmus+ Teacher Academies project. ISLE project is composed of 10 partner organisations from 7 European countries—Cyprus, Greece, Sweden, Finland, Italy, Spain, and Latvia.

As illustrated in Figure 2, the ISLE eHandbook aims to support educators in the design, use, and evaluation of innovative and sustainable learning environments. These learning environments entail pedagogical, psychosocial, and (technology-enhanced) physical dimensions. The ultimate aim is that learning environments foster quality, equity, and inclusion in education. The eHandbook includes seven interrelated chapters, each specifically focusing on one of these core concepts.

The eHandbook includes both theoretical and practical guidance for learning environment design, use, and evaluation at classroom, school, and beyond school levels. Reflection activities are also provided.

The handbook is targeted particularly at pre- and in-service primary school teachers and headteachers but it also aims to also serve other educational levels and stakeholders working with learning environment design, use, and evaluation.

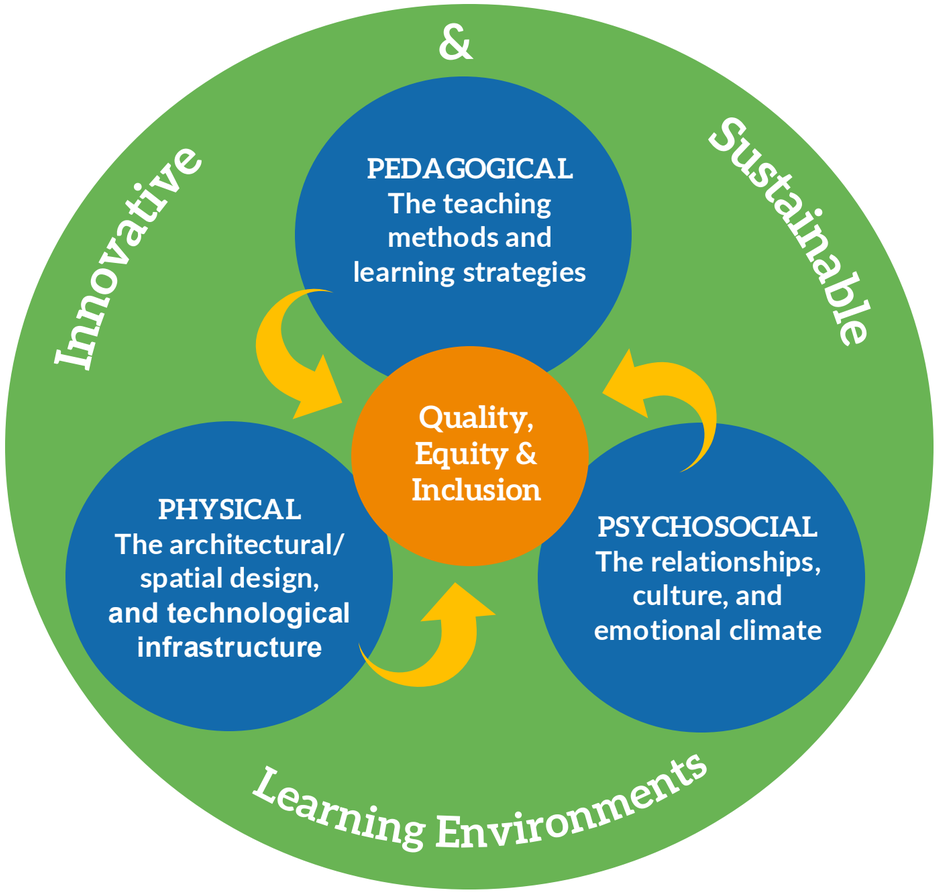

Figure 2. Core concepts of the ISLE eHandbook

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Introduction to ISLE eHandbook

Each eHandbook chapter begins with **Section 1** where the theory and definitions of the concepts in the chapter are explained. **Section 2** invites the reader to reflect on how the topic connects with one's existing knowledge and everyday reality. **Section 3** highlights the significance of the chapter topic in learning environment design, use, and evaluation. This section is supported by the findings of the analysis of curricular and other relevant education policy documents, conducted as part of the ISLE project in each participating country.

Sections 4-6 present good practices shared by teachers, school directors, pre- and in-service teacher trainers, policy makers, teacher/director union representatives, researchers, and other experts in each participant country. Examples of good practices were selected from the individual and group interviews conducted as part of the ISLE project. **Section 4** examples can be applied by individual teachers in their working environment, while **Section 5** applies to the whole school environment. **Section 6** gives ideas on collaboration that extends school boundaries and involves other key stakeholders such as guardians, informal and non-formal educational providers (e.g., hobbies, libraries, science centers, museums), work-life representatives, and policy makers. Finally, **Section 7** introduces questions to reflect on how the ideas in the chapter could be applied in one's everyday practices. **References and further reading for each chapter are provided at the end of the book**.

Section 1 Theory and definitions
Section 2 Pre-reflective questions
Section 3 "Why does it matter?"
Section 4 Classroom environment level examples
Section 5 School environment level examples
Section 6 Beyond-school environment level examples
Section 7 Final reflections

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Chapter 1
Quality

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Section 1 Theory and Definitions

Quality is about how effectively educational stakeholders such as teachers, school leaders, and policymakers support student learning and wellbeing. As shown in Figure 3, quality refers to inputs (resources, methods, and environments), processes (teaching, engagement, and assessment), and outcomes (achievement, competences, and wellbeing). To improve learning environment quality, we need to focus on all three:

1. **Inputs:** These are the foundations for the quality also including innovative and sustainable pedagogical, psychosocial and (technology-enhanced) physical environments, in which learning occurs and which affect learning processes and outcomes.
2. **Processes:** This is about action- how these inputs are used to help students learn and feel well.
3. **Outcomes:** These are the results, including knowledge, practical skills, and attitudes. Quality is measured by both academic success and student wellbeing.

Physical and psychosocial wellbeing are both starting points and goals: students need to feel well to learn, and good education should, in turn, teach them how to stay well. Finally, **equity and inclusion** are the glue that holds everything together, ensuring a fair and effective environment for every student (see Chapter 2).

Figure 3. Components influencing the educational quality

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Section 2 Pre-reflective Questions

What supports the quality of our pedagogical, psychosocial, and physical classroom environments?

How does our school environment support learning and wellbeing?

How does our school work together with families and other institutions to foster quality in learning environments?

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Section 3 Why Quality Matters

European policy documents define what "high-quality education" means. This directly guides instructional strategies, funding, and expected outcomes. To reach these goals, **we must be explicit about quality.** It is also essential that school community members and system-level stakeholders **share the same understanding** of what is considered high quality. Our understanding of quality education **influences how pedagogical** (teaching), **psychosocial** (relationships), **and** (technology-enhanced) **physical learning environments are used**.

European policy documents share the multidimensional view of quality including **not only academic attainment but also Key Competences for Lifelong Learning, as well as wellbeing, equity, and inclusion**. There is variation, however, in how explicitly these aspects are connected to innovative and sustainable pedagogical, psychosocial and physical learning environments.

Read together, each of the seven chapters of this eHandbook give one perspective on high-quality learning environments. The risk of low quality emerges when only some learning environment dimensions (e.g., innovative physical spaces) are pursued without aligning them to other (e.g., inclusive and sustainable pedagogical and psychosocial learning environments).

Figure 4. Istituto Comprensivo Borsi, Scuola Primaria Viscontini @ Giuseppe Moscato (INDIRE)

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Section 4 Classroom Level Examples

Interviews from the ISLE project show that high quality of learning environments depends on a successful match between human activities (how we teach and interact) and physical space design:

- **High-quality pedagogical learning environments** rely on teaching methods that are flexible, adaptable, and versatile. Key examples include co-teaching, differentiated, collaborative, active and project-based learning, as well as outdoor pedagogy.

- **High-quality physical learning environments** are versatile, flexible and modular. In such spaces, movable furniture and adaptable layouts are easy to reconfigure. A high-quality space can quickly switch between group work, individual study, and whole-class activities.

Quality and participation are sustained by combining whole group teaching in short introductions and wrap-ups, with more active, personalised or collaborative work, for instance, in rotating activity stations

Figure 5. Breakout area for group work- Maatulli School ©MultiLED

Teachers express that teaching quality is built through strong curricular knowledge, commitment, perseverance, and continuous professional growth rather than reliance on a single textbook model.

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Section 5 School Level Examples

Educational quality can be supported by innovative pedagogical, psycosocial and physical learning environments such as:

- **Team teaching and collaborative planning**: Teachers working together in shared spaces, and co-designing interdisciplinary projects and lessons. This approach leverages the strengths of different educators, and models collaborative problem-solving for students.
- **Informal and social learning spaces:** The school provides areas beyond traditional classrooms, such as reading corners, relaxation zones, and open common spaces, where students can learn independently, collaborate informally, or simply recharge, recognizing that learning happens everywhere.

Figure 6. Versatile teaching strategies in a primary school ©Katerina Papoutsi

Pedagogical, psychosocial and physical learning environment quality can be supported by integrating **sustainability** principles into design. For instance:

- **Eco-designed physical spaces:** The school building and school yard are intentionally designed to encourage sustainable behaviors. Natural lighting, ventilation, and green spaces make it easy and inviting to conserve energy and connect with nature.
- **Learning spaces that promote resource efficiency:** Classrooms and common areas are equipped with visible recycling stations, water-saving devices, and energy-efficient appliances, making sustainable choices the default and most convenient option for everyone.

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Section 5 School Level Examples

Figure 7. High-quality musical instruments avaible for students to practice- Kottby lågstadieskola ©MultiLED

Many stakeholders interviewed in the ISLE project expressed that time for continuous professional development and for adapting policies to the school community's specific profile is essential for sustaining inclusive, high-quality learning environments.

Other school level examples fostering quality include:

- Annual goal discussions with teachers to plan professional development systematically.
- Joint planning, facilitation, and participatory processes in physical learning environment design.
- Practice-based professional development, such as **learning walks** helps leaders and teachers jointly observe learning environments and align school-wide expectations.

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Section 6 Beyond School Level Examples

Educational quality cannot be measured solely through academic results; it must also include elements such as students' presence, participation, and progress in diverse indoor and outdoor learning environments.

Research collaboration such as **the School Well Project** in Finland generates shared school improvement ideas.

Webinars, seminars, fairs, and open platforms are important for sharing and disseminating good practices.

Transversal studies of learning environments in teacher education may include, for instance, reflection on video extracts from real school settings.

National evaluations and broad learning environment studies inform policy and system improvement.

School visits, peer observation, and exchange with other schools to learn how spaces support different pedagogies, spread effective organisational routines.

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Section 7 Final Reflections

How could examples of this eHandbook be applied to my everyday pedagogical,

psychosocial and technology-enhanced physical learning environments?

What challenges would I need to tackle?

What initiatives could we develop in our school community to improve the quality of our learning environments? Who should be involved in this work? What could we do even with a small group of colleagues?

How could we enhance our collaboration with stakeholders representing out-of-school learning environments, both in the local community and more widely, to reach better quality?

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Chapter 2
Equity and Inclusion

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Section 1 Theory and Definitions

Equity in education means ensuring that all students have fair and just opportunities to succeed, regardless of their background, identity, or circumstances. Unlike equality, which is about ensuring the same opportunities for all, equity acknowledges that students have different needs and barriers, requiring differentiated support to achieve similar outcomes.

Inclusion is a pedagogical approach aimed at creating a "school for all," where the educational environment is adapted to every learner's needs while recognizing and accepting diversity. Inclusive education is a fundamental element of a school that promotes equity, acceptance, and respect for diversity. The core objective is to organize schools and classrooms so that all students achieve their goals according to their individual needs.

- **A Holistic Approach:** Inclusion aims for the equitable participation of all learners, regardless of ability, background, or identity.
- **Philosophy of Respect:** It is based on valuing diversity and strengthening social interaction.
- **Inclusive Environments:** Inclusion is a prerequisite for shaping learning experiences that respond to individual student needs.
- **Systemic Impact:** Implementation affects not only teaching but also school culture, classroom organization, and the partnership between teachers and families.

Contemporary education policy is shifting away from the medical model of disability, which traditionally emphasized deficits, toward **a socio-pedagogical paradigm**. The education of children with special educational needs is no longer conceived within isolated contexts, rather, it is viewed as a **dynamic interaction** between the student and their environment. Inclusive education mandates a school system that proactively adapts to the diverse needs of all children, rather than requiring students to conform to a rigid, pre-existing structure.

Table 1 (see page 17) summarises some principles that should be considered in equity- and inclusion-supportive learning environment design, use, and evaluation.

Figure 8. Creative hands-on activities @INDIRE

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Section 1 Theory and Definitions

Table 1 Principles to consider in the equity- and inclusion-supportive learning environment design, use, and evaluation

Inclusion in Education

- **Holistic Approach:** Aims for the equitable participation of all learners through strengthening social interaction.
- **Prerequisite for Quality:** Inclusion is the foundation for shaping learning experiences that respond to individual student needs.
- **Cultural Shift:** It reshapes school culture, classroom organization, and the partnership between teachers and families.
- **Removing Barriers:** Focuses on ensuring every learner can thrive academically, socially, emotionally, and physically.

Equity in Education

- **Reducing Disparities:** Aims to reduce gaps based on gender, poverty, residence, ethnicity, and language to ensure just access and outcomes.
- **Equity ≠ Equality:** Equity acknowledges that learners have different starting points and require differentiated support to meet those unique needs.
- **The Fairness Perspective:** Minimizing the impact of fixed background factors (disability, gender, ethnicity) on learning results.
- **Organized Effort:** It is a systematic commitment to organizing schools so all students can achieve their goals.

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Section 2 Pre-reflective Questions

When a student faces barriers to participation, is my primary analytical focus on the student's perceived "impairment," or do I critically evaluate the environmental and pedagogical obstacles inherent in my own instructional design?

Which specific moment during today's instructional practice challenged one of my personal unconscious biases or stereotypes regarding the developmental potential of a student with special educational needs?

Beyond cognitive attainment, how could the integration of arts and collaborative activities empower marginalized students to perceive their own voices as integral to valuable to the school community?

When assessing goal attainment, does our school system provide diverse pathways for students to demonstrate their understanding, recognizing multiple intelligences and modes of expression beyond conventional linguistic benchmarks?

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Section 3 Why Equity and Inclusion Matter

Inclusion takes into account human rights. It provides all students with access to high quality education in a learning environment where they can have **personalised support**, and experience **social integration** and **belongingness** in their wider social network, regardless of their individual needs or backgrounds.

In approaches such as **"design for all", as well as universal, inclusive and accessible design** of physical and digital learning environments, the environment itself becomes a mechanism for inclusion and equity.

The education policy analysis conducted in the ISLE project confirmed that equity as well as inclusive education (fundamental principles in the European Union), are also reflected in national policies. Educational systems work against exclusion and segregation of all types. Education is also seen as a means to compensate for socio-economic or individual disadvantages. It can be done, for instance, by needs-based resource allocation.

Inclusive learning environment design is shifting from "fixing the student" to "fixing the environment."

Figure 9 Considering inclusive design: an anti-slip strip @Xenia Mitsi

Figure 10. Acoustic panels reducing noise in the ceiling- Rauma teacher training school @Anna Laukkarinen

Figure 11. Inclusive Teaching Strategies in a primary school ©Katerina Papoutsi

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Section 4 Classroom Level Examples

Co-planning and co-teaching between the general and special education teachers ensures that individual support is provided in the classroom.

Students with neurodevelopmental conditions may benefit from short, focused work sessions, visual aids/supports, and carefully planned entry and exit routines. These practices benefit the whole class by clarifying the lesson.

Applying universal desing, and providing lesson materials in multiple formats (video, audio, text) enables all students, not just those with special educational needs, to choose how to access information. Technology and AI can be used to tailor learning materials, allow students to create digital content, and engage diverse learning styles.

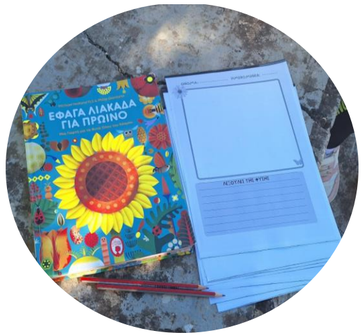

Figure 12. Inclusive Teaching Strategies in a Primary School ©Katerina Papoutsi

Differentiation must not only consider tasks, but also time, difficulty, activity type, and motivation triggers. Structured collaborative sequences, such as alternating collective discussion with small group work and individual reflection normalizes different learning rhythms.

Frameworks that provide multiple means of action and expression, incorporate tiered assignments (e.g., **Think Dots**, **Choice Boards**) and visual scaffolding (e.g., **the Frayer Model**) accommodate diverse cognitive profiles.

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Section 4 Classroom Level Examples

Difference between spatial equality and equity:

- **Spatial equality:** "**E**very student should be entitled to their own desk."
- **Spatial equity:** "**E**very student should be entitled to workstations that respond to their specific needs."

Creating different "stations" in the room where students work on the same topic but with different tools (e.g., tablets, tactile material, or simplified text) based on their needs enables differentiation in all directions.

Figures 13-17. Responding to students' individual needs by offering varying workstations- Mäkelänmäki school ©LED Nordic

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Section 5 School Level Examples

Equity is treated as a **structural duty** of the school administration, not just an individual teacher's responsibility. For example, school leadership proactively allocates extra staff and resources to diverse classrooms.

A 'Working Group for Inclusion' ensures that teachers, parents, and school leaders are collectively committed to implementing i**ndividualized education plans (see e.g., Inclusive Education Working Group).**

School-wide policies eliminate physical and social barriers, ensuring that common spaces (yards, libraries) promote wellbeing and collaborative learning for all.

In a **Greek** primary school, the principal assigns the Inclusion Unit teacher to the mainstream classes for co-teaching. Simultaneously, the school organizes 'Inclusion Open Days'. Rather than speaking only to parents of children with disabilities, the school explains to all families how differentiated tools (like visual schedules) help every child remain focused. This school-level policy shifts the culture from 'us and them' to a single, sustainable learning community.

To address the communication gap between school and home, the school sends regular inclusion briefings for **all** parents, transforming diversity into a shared school value and reducing social stigma.

Physical learning environments are designed to support (1) physical accessibilty and mobility, (2) hearing and acoustics, (3) vision and visual orientation, (4) neurodiversity, (5) cognitive support and orientation, and (6) psychosocial and emotional accessibility.

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Section 6 Beyond School Level Examples

Universal Design principles extend to the school's surrounding area and accessible urban design (safe crossings, accessible parks, digital community platforms), ensuring that the city becomes a learning environment for all.

Grassroots partnerships with civil society organizations, such as the experiential disability awareness programs run by **S.K.E.P.**, provide a strong model for school-level inclusion. These initiatives have been recognized as a global best practice for fostering empathy and dismantling social barriers (see also **Zero Project**).

Schools partner with local NGOs and municipalities to create "Inclusive After-School Clubs." This promotes social sustainability by allowing students with and without disabilities to interact in non-academic settings (sports, arts, circular economy projects)

Addressing regional disparities in Italy (e.g., the north–south divide) through “Territorial Pacts,” the state directs targeted funding initiatives, such as “Agenda Sud,” to inner areas to ensure that a student’s right to inclusion does not depend on their postal code.

In the European **Teacher Education for Inclusion** initiative, the **profile of inclusive teachers** entails, for instance, an inclusive attitude, internalising equality and equity as values, and believing that everyone can learn. An inclusive teacher continuously develops oneself and is open to professional growth.

Establishing a permanent link between schools and external support services fosters inter-agency collaboration like **KEDASY** in **Greece** or EPSi n **Cyprus**. Such collaboration supports students’ transition from school to community through coordinated psychological and social services.

European approaches typically emphasize systematic collaboration among teachers, learners, colleagues, special educators, families, and external professionals as a central mechanism for supporting all students’ learning and participation.

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Section 7 Final Reflections

Does my teaching ensure cognitive and psychological access through multimodal representation (visual, auditory, kinesthetic), or is it limited to mere physical presence?

Do I provide the same resources to everyone, or do I utilize differentiated scaffolding to ensure true equity based on individual student needs?

How does our school provide opportunities for democratic participation and the practical application of human rights for all students?

Are our inclusive efforts isolated, one-off interventions, or are they embedded in a sustainable framework that promotes long-term social integration?

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Chapter 3
Innovative Learning Environments

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Section 1 Theory and Definitions

Organisation for Economic Co-operation and Development (OECD) defines innovation as "**a new or improved product or process** (or combination thereof) that differs significantly from the unit's previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process)." The OECD also aims to allign the idea of innovation with the United Nation's Sustainable Development Goals (SDGs). Furthermore, it reminds that what is considered innovative is always contextual.

What is important in innovation?

- Researching, developing, and evaluating advances in technologies, spaces, and organisational cultures.
- Recognising the cyclical and on-going nature of innovation and change involving design and redesign over time that can lead to system building and transformation when the innovation is sustained.
- Creating wider partnerships, networking, and sharing knowledge in growing, spreading, and sustaining innovations.

OECD has defined Innovative Learning Environments (ILEs) as organic, holistic ecosystems including the activity and outcomes of learning. ILEs include learners (who?), teachers or educators (with whom?), content (what?) and resources (with what?). Resources entail innovations in physical (buildings, facilities, infrastructure, learning materials) and digital resources.

ILEs rely on successful merging of innovative space design- furniture, technology, and other infrastructure, with innovative teaching and learning practices:

- **Innovative learning spaces** refer to technology-enhanced physical learning environments that are designed to facilitate flexibility in teaching, learning, and social activity.
- **Innovative teaching and learning practices** are the sum of teaching and learning activities that, in combination, assist in the best possible learning and wellbeing outcomes. They are characterized by student-centred, adaptable, and collaborative pedagogical approaches.

The alignment between the approach to teaching and learning, and the physical space in which it occurs is critical for promoting educational quality, equity and inclusion.

Figure 18. Flexible spaces designed and used for co-teaching- Kortepohja daycare-school @ILE JYU

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Section 2 Pre-reflective Questions

How can I redesign or adapt physical and digital spaces to enable different learning modes (e.g., collaboration, individual work, small groups)?

How can informal or adjacent spaces be used to enrich learning experiences and support student wellbeing?

What concrete actions at the school level can strengthen a shared, innovative, and sustainable approach to using spaces for quality, equity, and inclusion?

How can our school collaborate with external stakeholders to expand and enrich learning spaces beyond the school environment?

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Section 3 Why Innovation Matters

Innovation matters because it **enables learning environments to evolve** as dynamic and interconnected systems, where pedagogy, space, resources, and organisational practices are aligned and continuously redefined. Across the cross-country data from curricular and other education policy documents from seven European countries, innovation is not described as the simple introduction of new infrastructure, but as a process emerging from the interaction between teaching practices, the design and use of learning spaces, and organisational conditions.

Figure 19. Shared spaces for smaller gatherings.
©JYU Teacher training school

Innovation is understood as **cyclical and practice-based**, rather than static. Innovative learning environments are often **co-designed** through collaboration between teachers and school leadership, and developed through iterative processes of experimentation and refinement.

Figure 20. Innovative learning spaces- Valteri School Onerva ©Reino Tapaninen

The presence of new infrastructure does not automatically lead to innovation. Even traditional school buildings can support effective practices when there is a shared pedagogical vision guiding how spaces are used. Conversely, newly designed environments may not produce meaningful change if not aligned with teaching practices.

Flexibility emerges as a key feature of innovation. Learning spaces are organised to support different modes of activity- collaboration, individual work, and group learning, allowing teachers to respond to diverse needs. These spatial configurations are closely linked to more active and student-centred pedagogies.

Innovation is sustained through professional collaboration. Professional development is most effective when connected to classroom practice and supported by opportunities for collective reflection. Leadership plays a crucial role in enabling these conditions.

Overall, innovation matters because it supports the development of learning environments that are flexible, coherent, and responsive, contributing to improved learning, inclusion, and wellbeing.

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Section 4 Classroom Level Examples

Innovation is enacted through the integration of flexible teaching practices, purposeful use of space, and meaningful use of digital tools.

Innovative learning activities may include collaborative work, small-group instruction, and individual tasks supported by spatial arrangements that allow for different modes of learning. For example, classrooms can be organised into zones for discussion, focused work, and group activities, enabling more adaptive and student-centred approaches.

The PACBAL literacy assessment tool in Catalonia, Spain, is used to track children's early reading skills and guide tailored support. It forms part of a broader school initiative to strengthen evidence-based reading-instruction, and ensure continuity from early childhood to primary education. This innovative program also includes an inter-generational reading partnership, where secondary students volunteer to support younger pupils through weekly guided reading.

Innovative teachers engage in ongoing experimentation, gradually refining their practices based on students' responses. Innovation is therefore characterised by the **alignment** between pedagogy, space, and resources, rather than by the introduction of isolated tools.

Digital technologies are used to support engagement and differentiation, but always in connection with clear pedagogical goals. Digital tools like interactive whiteboards and drawing applications (e.g., Tux Paint) serve as dynamic entry points that seamlessly transition into hands-on activities.

Figure 21. School corridor and a corner dedicated to reading- Maatulli school ©MultiLED

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Section 5 School Level Examples

Innovation is supported through organisational conditions that enable collaboration, reflection, and shared development of practices. School leadership plays a key role in fostering a culture of experimentation, encouraging teachers to explore new approaches, and providing time for collective discussion.

Professional development is organised in ways that are closely connected to classroom practice, often through peer learning and internal sharing.

Spatial flexibility is strongly endorsed by **school leaders**, who encourage the creation of "**centers of interest**" and experiential activities, even repurposing existing materials and spaces.

Innovation becomes more sustainable when it is embedded in everyday routines and supported by a shared vision, rather than relying on individual initiatives. Schools develop shared guidelines on the use of spaces and technologies, ensuring coherence across different classrooms.

Figure 22. Staff room to facilitate teacher encounters- Mäkelänmäki school ©LEDNordic

Figure 23. In the teachers' workspace, individual work is supported by panels that increase privacy- Mäkelänmäki school ©LED Nordic

Schools are experimenting with interdisciplinary projects and thematic learning weeks, which promote collaboration among students and teachers across subjects.

Stable and well-functioning staff environments enable collaboration, informal exchange, and recovery. Functional staff rooms and shared workspaces are essential infrastructure for sustained pedagogical development and long-term innovation.

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Section 6 Beyond School Level Examples

Schools open their spaces to the community- using libraries, halls, or common areas for learning activities involving external actors. These collaborations contribute to sustaining innovation over time, enabling it to move from isolated practices to more systemic and transferable models.

The education system benefits from shared European policy frameworks and access to EU funding.

Participation in networks and projects allows schools to share practices, observe other contexts, and adapt innovative approaches. Site visits, exchanges, and joint initiatives support circulation of ideas and reduce isolation.

Figure 24. Music facilities also serve for after school music clubs- Kortepohja daycare-school ©LED Nordic

Schools engage with families, local organisations, and educational institutions to extend learning opportunities beyond the classroom, and to connect formal and informal learning environments.

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Section 7 Final Reflections

How can I better align my teaching practices, the use of physical and digital spaces, and available resources to create a more flexible and innovative learning environment?

How can our school collectively design and use learning spaces in ways that support coherent, innovative and student-centred practices across classrooms?

How can we strengthen collaboration with external stakeholders and networks to support long-term innovation of our learning environments?

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Chapter 4
Sustainable Learning Environments

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Section 1 Theory and Definitions

Sustainable development has been defined by the United Nations (UN) as a **development that "meets the needs of the present without compromising the ability of future generations to meet their own needs"**. Table 2 gives examples of how sustainability can be considered from various angles. Environmental, societal, cultural, and economic sustainability are interconnected and are all crucial for planetary, beyond-human wellbeing.

Table 2 Examples of environmental, societal, cultural, and economic sustainability

Environmental	Societal	Cultural	Economic
e.g., sustainable management of natural resources	e.g., equitable social development and inclusion	e.g., nurturing traditions, heritage, languages, and values	e.g., sustainable, Inclusive, and equitable economic growth

Figure 25. United Nations (2025). Sustainable development goals.

Sustainable learning environments refer to pedagogical, psychosocial and physical learning environments that foster environmental, societal, cultural and economic sustainability. A sustainable learning environment is an educational setting that supports long-term, effective learning while minimizing negative impacts on the environment, promoting cultural diversity, social and economic equity, and using resources efficiently. It integrates principles of sustainability into its physical environments, teaching practices and organizational culture.

Sustainable learning environments are designed and used to promote the UN's Sustainable Development Goals (Figure 17). Quality education (Goal 4) is the key that will allow many other Sustainable Development Goals to be achieved. In addition to **pedagogical quality, the quality of school infrastructure, green transition/green approaches, wellbeing, and responsible digital transformation** are considered as important components in quality education.

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Section 2 Pre-reflective Questions

How could I use outdoor spaces for raising environmental awareness among students (e.g., gardening, nature observation, outdoor science labs, etc.)?

How could school's procedures and organization better consider sustainability criteria (e.g., use of digital instead of paper resources, sharing of materials, energy-saving procedures, waste reduction, etc.)?

Think of examples of how the education system (e.g., curriculum) considers environmental, societal, cultural and economic sustainability?

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Section 3 Why Sustainability Matters

The analysis of the curricular and other education policy documents in seven European countries reveals that the concept of a sustainable learning environment is articulated around three complementary approaches, with each country placing greater weight on specific areas:

1.The sustainable learning environment as a curricular value: In some countries, the emphasis lies on curricular integration. For instance, in Finland and **Sweden**, sustainability is a transversal normative framework (ecological, social, and cultural) embedded within the curricula and pedagogical orientation, rather than an independent infrastructural program. The learning environment is defined by its accessibility, ecological design, and pedagogical use. Similarly, in **Latvia**, the sustainable learning environment is understood through competence-based education.

2. The sustainable learning environment as infrastructure and efficiency: In countries such as **Greece**, **Spain** (Catalonia), and **Cyprus**, the emphasis appeared to be placed mostly on the physical dimension: energy performance, bioclimatic construction, and the transformation of common spaces (corridors or schoolyards) into renatured educational areas. In these cases, sustainability is often synonymous with energy efficiency.

3. The sustainable learning environment as an ecosystem of transformation: Italian policy documents presented the most integrative model, defining schools as "living labs." The learning environment merges architecture, pedagogy, and civic participation, viewing sustainability as a structural and systemic transformation of the school center.

A diversity of perspectives in educational policies emerges from this analysis across the various countries regarding sustainable learning environments. Some systems approach the integration of learning environments from infrastructural (physical) change toward the curriculum, while others move from the curriculum toward the building-visions that are often loosely connected.

These differences highlight the need to integrate the use of sustainable learning environments from a holistic perspective within pre- and in-service teacher training, in alignment with long-term environmental, social, cultural, and economic commitments.

Figure 26. Innovative and sustainable environments in a primary school ©Katerina Papoutsi

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Section 4 Classroom Level Examples

Figure 27. Birch trunks exhibited on a wall with posters on the nature protection, Maatulli School ©MultiLED

Use empathy-building activities such as asking children to imagine the perspective of a tree, stone, or trash can, including video tasks from those perspectives.

Foster environmental awareness and nature connectedness through "indoor greenery", regular outdoor activities, and experiential learning in unconstructed natural settings.

Treating the school premises with care is a sustainability practice that also strengthens belonging.

Physical spaces themselves can be used as tools for sustainability learning through nature-linked design, ecological materials, and recycling practices.

Figure 28. Plants and an indoor tent ©JYU Teacher training school

Figure 29. Biophilic interior design in a school @Anneli Frelin, HiG

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Section 5 School Level Examples

Sustainable desing is present in everyday actions such as recycling, reducing energy consumption, and sustainable purchasing decisions, as well as school-level sustainability theme days or projects.

Involving students in space (re)design helps them value and care more for the environment.

The Green Schools Program supports innovative educational actions aimed at addressing the new challenges and values of sustainability. It (1) helps schools to incorporate sustainability in all areas of school life (curriculum, management, relationships with the community, etc.), (2) promotes active participation and involvement of the educational community in improving their environment, and (3) encourages exchange and collaboration between schools that share the same objectives.

Figure 30. Local vegetation planted to the school patio-Maatulli School ©MultiLED

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Section 5 School Level Examples

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Figures 31., 32. & 33. Students collecting and recycling trash in the neighborhood as a part of Green School Programme @FVCE

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Section 5 School Level Examples

Figure 34. Plants in the breakout space-Kangasvuori daycare-school ©ILE JYU

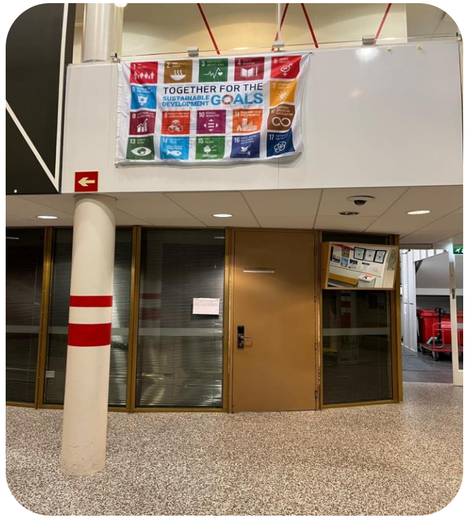

Figure 35. Sustainability goals poster on the entrance wall
©JYU Teacher training school

Figure 36. Green wall
©JYU teacher training school

The physical environment communicates and reinforces the school's commitment to sustainability: displays of student projects on environmental topics, visible sustainability goals, and spaces for community engagement make sustainability a lived value, not just a rule.

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Section 6 Beyond School Level Examples

The Catalan Popular Culture Pack in **Spain** connects 3rd-grade primary school students with some of the city's organizations linked to Catalan culture, of which, e.g., the human towers have been declared an Intangible Cultural Heritage of Humanity.

Outdoor and nature-based environments play a central role in education: nature may be considered an essential learning arena that contributes to identity formation, cultural understanding, and health.

UNESCO Associated Schools Network promotes education for sustainable development, global citizenship education, as well as intercultural and heritage learning.

Sustainability is integrated across teacher education and policy as a cross-cutting societal and educational goal.

Figures 37. & 38. Students are getting familiar with the Catalan popular culture @FVCE

Municipal reuse systems for furniture and materials support ecological sustainability while allowing schools to adapt classrooms with cost-efficient and functional solutions.

The Remuda project in **Italy** connects schools with local enterprises to "allocate to schools what would be waste for companies", transforming discarded non-conventional materials into creative pedagogical resources.

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Section 6 Beyond School Level Examples

To address the socio-ecological challenges of the 21st century and achieve the Sustainable Development Goals (2030 Agenda), UNESCO proposes a model of Education for Sustainable Development based on an action-oriented transformative pedagogy. This approach seeks to ensure that students adopt an active, critical, and transformative response through three interconnected learning domains:

- Cognitive Learning: the knowledge and competences necessary to understand the socio-ecological problems addressed by the SDGs.
- Socio-emotional Learning: the values and skills needed to collaborate and motivate change.
- Behavioural Learning: the action competencies required to intervene in the environment across environmental, social, cultural, and/or economic spheres.

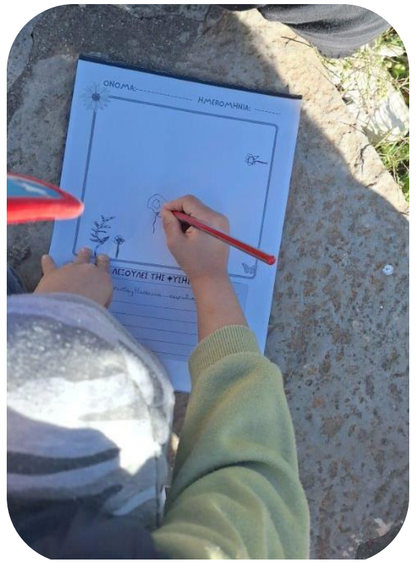

Figure 39. Outdoor learning in a primary school
©Katerina Papoutsi

The "PISA 2025 Science Framework" introduces the concept "Agency in the Anthropocene", which defines the attitudes necessary to act in a transformative manner:

- Teachers are the key agents in facilitating the transition toward sustainable lifestyles. To empower students, it is essential that educators are equipped with the knowledge, competencies, skills, and values required for this transition.
- Nevertheless, the teaching task cannot exist in isolation. A whole-institution approach is required, where the management teams and the school's decision-making processes are consistent with what is taught in the classroom. The goal is to create learning environments where students "learn what they live and live what they learn".
- Finally, this coherence must extend beyond the school walls by collaborating with local stakeholders to build high quality educational ecosystems.

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Section 7 Final Reflections

How could you reflect sustainability in practice through paying attention not only to environmental issues but also to social, economic, and cultural aspects?

What would you need more to be prepared as a school community to design and use sustainable learning environments?

How could you engage students in sustainable practices (e.g., recycling, composting, water collection, valuing cultural heritage, supporting vulnerable groups, etc.)?

Think of some ways to collaborate with outside the school community to foster sustainable development?

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Chapter 5
Pedagogical Learning Environments

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Section 1 Theory and Definitions

Pedagogical learning environment refers to methods, strategies and practices that facilitate learning. They include:

- **Curriculum design and instructional approaches** (e.g., direct instruction, inquiry-based, project-based, and blended learning).
- **Learning activities and physical digital tools** that foster engagement and collaboration.
- **Assessment for learning** (particularly formative assessment).
- **Student experience**: participation, agency, inclusion, differentiation, and autonomy.

The effectiveness of Pedagogical Learning Environments can be measured through **two dimensions**: Quality (see Chapter 1) and Equity (see Chapter 2):

Quality

Measuring outcomes of schooling by investigating whether:

- more than expected is achieved
- what was expected is achieved
- less than expected is achieved

Equity

Measuring the "reduction" in the impact of background factors on outcomes of schooling by investigating whether:

- more than expected is achieved
- what was expected is achieved
- less than expected is achieved

Figure 40. Movable furniture and screens that can be configured for the whole group or small group activities- Muonio School ©Reino Tapaninen

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Section 1 Theory and Definitions

Learning occurs through **teacher-student and student-student interactions**.

Teachers' contribution in promoting and supporting students' learning at the classroom level is known to be the most immediate and direct factor explaining student engagement and achievement. Observable teaching behaviours such as **classroom management, cognitive activation, and supportive climate** have measurable effects on student outcomes. Figure 41 presents classroom-level factors that are considered as generic in nature, as they can be implemented to an impact on student learning regardless of the subject being taught.

School level factors (see Figure 42, page 47) related to school policies for designing, using, and evaluating pedagogical learning environments are expected to have **mostly indirect effects** on student achievement. School factors include school policy and evaluation on teaching and learning environments, and actions to improve them.

Figure 41. Eight generic factors of effective teaching in classroom environments- adapted from ©Creemers & Kyriakides (2008)

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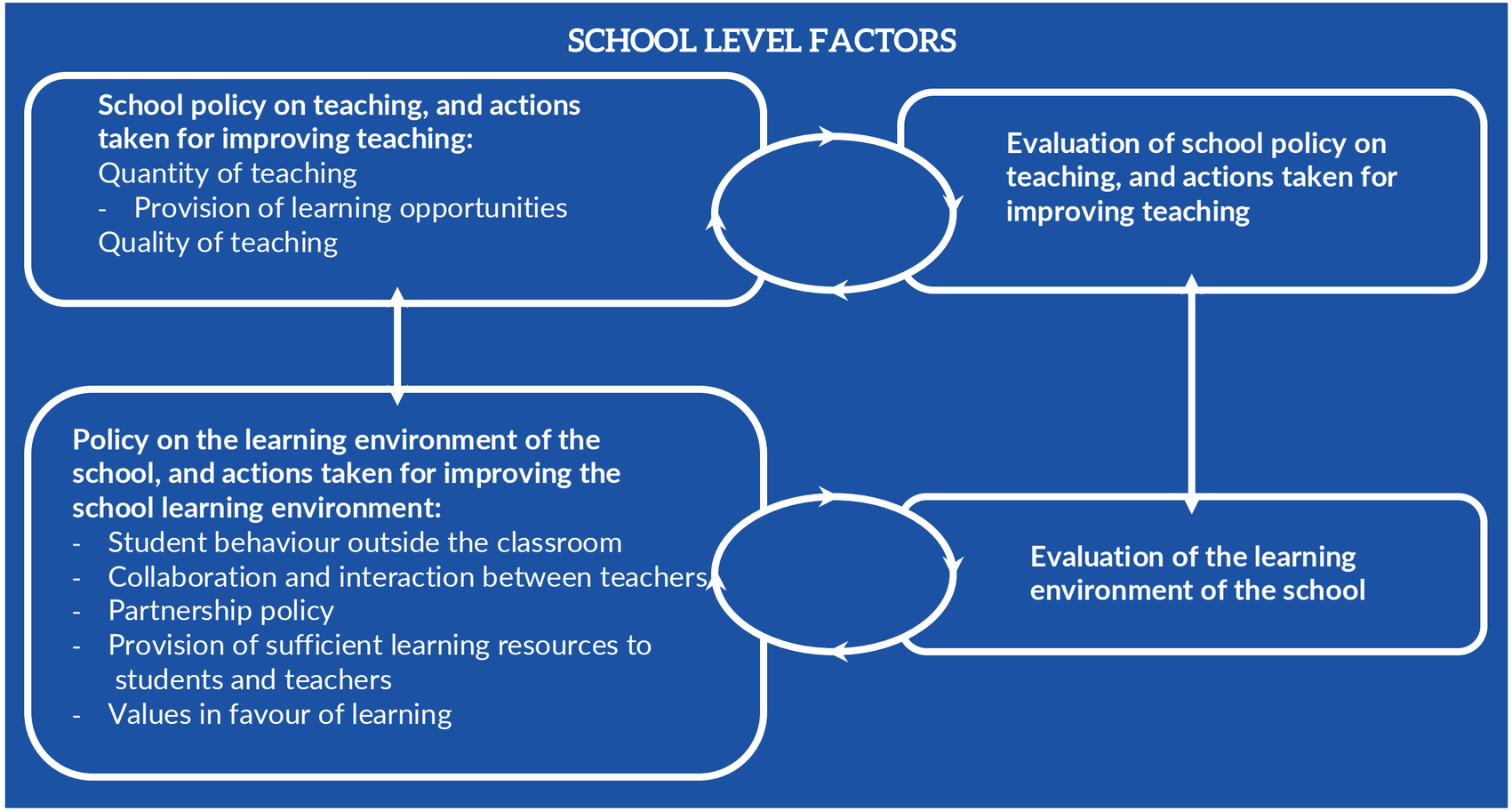

Figure 42. Main elements of school-level factors adapted from ©*Creemers & Kyriakides*

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Section 2 Pre-reflective Questions

How do interactions in my classroom support student learning? What aspects of my teaching most influence how students learn?

How does my school shape the way teaching and learning take place? In what ways does the school environment support or limit effective learning?

How do wider education policies influence what happens in schools and classrooms? What factors outside the school impact teaching and student learning?

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Section 3 Why Pedagogical Learning Environments Matter

Based on the curriculum analysis conducted in seven European countries participating in the ISLE project, pedagogical learning environments are defined as **versatile and flexible** environments accommodating individual needs.

The importance of **student-centred, inquiry-based, active, and participatory approaches** is emphasised. Instead of simple knowledge acquisition, competences such as **critical thinking, creativity, collaboration, self-regulation, and learning to learn** are viewed as important.

The quality of pedagogical learning environments matters as it is among the most important factors explaining students' learning outcomes.

Figure 43. Walls that can be opened and closed between classrooms to enable co-teaching- Kortepohja daycare-school ©Markku Lang

Figure 44. Individual tables can be configured for pair or group work ©JYU teacher training school

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Section 4 Classroom Level Examples

Versatile pedagogies include, for instance, personalised learning, outdoor learning, playful learning, and interdisciplinary inquiry/project-based learning through interactive stations and artefacts.

Interaction skills, collaboration, and socioemotional competences should be treated as explicit pedagogical goals. Social learning and group collaboration can take place in varied indoor and outdoor settings.

The use of short instructional videos, concept cards, classroom screens, and timers supports both clarity and autonomous work routines.

Pedagogical practices such as language-development approaches across subjects, structured dialogue models, and cooperative learning methods (e.g., *Think–Pair–Share*) ensure that all students have an active learning role.

In formative assessment practices, feedback is used continuously to support student learning rather than relying solely on summative evaluation.

In flipped learning, teachers may provide goals for the week, and students can suggest the content and how to study it. It does not, however, mean that students are left alone to study, but teachers scaffold the work depending on each individual's need for guidance.

Combining digital and physical collaborative spaces supports teacher (e.g., co-teaching) and student collaboration. By regrouping learners regularly, they learn to collaborate with different peers.

Movement-based dialogue can be used to support language development.

Visual and tactile learning may support learning historical or scientific contexts. Real-world observation can be employed, for instance, in biology, ecology, and geography.

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Section 5 School Level Examples

Established professional learning communities provide opportunities for teachers to regularly share experiences, co-develop teaching materials, and engage in joint problem-solving. This collaborative culture strengthens teaching quality and supports continuous professional development.

Induction routines for new staff, explicitly communicating how learning environments are to function, reinforce a shared pedagogical language and consistent expectations across the school day.

Flexible funding and professional development opportunities may consist of a personal voucher system or dedicated budget that allows educators to select training programs aligned with their specific classroom needs, supported by official leave from duties.

Professional development based on shared experiences, collaboration, and reflection helps teachers identify and consolidate good practices such as co-teaching and collaborative methodologies.

Figure 45. Furniture enabling multiple configurations- JYU Teacher Training School ©Markku Lang

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Section 6 Beyond School Level Examples

Teacher education practices that are exploratory, constructivist, and team-based rather than purely lecture-driven are used to support future teachers' pedagogical competences.

Educators are encouraged to engage in continuous professional development and lifelong learning through a wide variety of courses and workshops.

The **Skola2030** reform in Latvia has introduced a shift from content-heavy curricula towards competence-based education. The reform emphasises critical thinking, problem-solving, collaboration, and real-life application of knowledge, aligning Latvian education with broader European Union priorities.

Figure 46. Municipal library annexed to the school-Kortepohja daycare-school ©ILE JYU

Professional development through more organic, informal, and practice-based initiatives includes, for instance, collaborative long-term networks, shared digital repositories, peer observation, shadowing, and cross-school visits.

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Section 7 Final Reflections

What kind of teacher collaboration do I find the most beneficial for development of the pedagogical learning environment? How could co-teaching be supported at our school?

What pedagogical approaches would I like to further develop in my classroom to increase the quality of the pedagogical learning environment?

How does our school system support the development of high quality and inclusive pedagogical learning environments?

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Chapter 6
Psychosocial Learning Environments

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Section 1 Theory and Definitions

Psychosocial learning environments refer to the emotional and social climate within educational settings. This dimension encompasses the overall ambience of a learning space and is an important predictor of students' affective and cognitive outcomes. It includes elements such as:

- students' sense of belonging,
- emotional safety,
- trust,
- motivation, and engagement, as well as
- positive relationships between students, teachers, and other staff.

Together, these factors shape the social interactions and psychological conditions that i**nfluence students' learning, behavior, and overall well-being**, helping them feel safe, respected, included, and valued.

A positive psychosocial environment not only supports academic success but also promotes resilience, mental health, and long-term engagement in education.

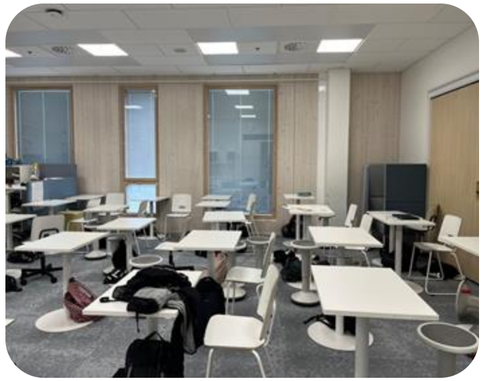

Figure 47. Varied classroom furniture- Mäkelänmäki School, ©LED Nordic

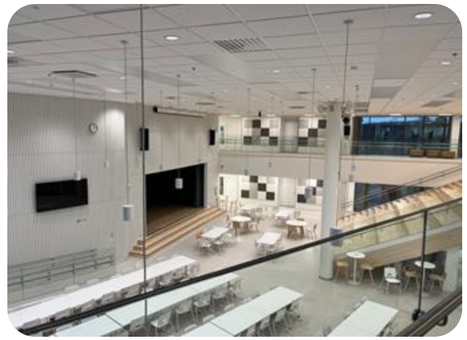

Figure 48. School canteen combined with the stage and stand stairs- Mäkelänmäki School ©LED Nordic

Figure 49. Small alcove in a classroom that can be closed to provide more privacy- Mäkelänmäki School ©LED Nordic

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Section 2 Pre-reflective Questions

How do I know my students feel safe, respected, and included in my learning environment?

Are relationships between students and teachers at our school positive and supportive? What could be improved?

Do all students have a voice in the learning process? Whose voices might be missing?

Who are the most important stakeholder groups outside the school that can contribute to creating a positive psychosocial learning environment?

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Section 3 Why Psychosocial Learning Environments Matter

Curricula in all seven European countries participating in this project emphasise that psychosocial learning environment quality is something that must be produced, not just assumed. A psychosocial learning environment matters because it shapes not only what students learn, but how they experience learning and whether they are able to succeed:

- **It directly influences academic outcomes:** When students feel safe, supported, and valued, they are more likely to concentrate, participate actively, and persist in challenging tasks. A positive emotional climate enhances motivation and engagement, which are essential for effective learning.
- **It plays a key role in students' wellbeing and mental health:** Environments characterized by trust, respect, and inclusion reduce anxiety and stress, helping students develop confidence and resilience. This, in turn, supports their ability to regulate emotions and cope with difficulties.
- **Psychosocial conditions shape relationships and classroom dynamics:** Positive interactions between students and teachers, as well as among peers, foster a sense of belonging and community. These relationships are fundamental for creating a supportive space where students feel comfortable expressing themselves and taking risks in learning.

A psychosocial learning environment contributes to long-term development. A strong psychosocial learning environment supports not only academic success but also the development of social skills, identity, self-efficacy, and lifelong learning attitudes.

A psychosocial learning environment matters because it creates the foundation for students to feel safe, motivated, connected, and capable, enabling both academic achievement and personal growth.

Figure 50. Well-organised spaces support good ambient @HiG

Figure 51. Vitrines for displaying learners' craft work- Kottby lågstadieskola ©MultiLED

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Section 4 Classroom Level Examples

Wellbeing can be embedded in everyday practice through activity-focused feedback, explicit teaching of routines, responsibility pairs, and guided group-work norms.

The Morning Meeting, developed within **The Responsive Classroom approach** is a short structured meeting made up of four parts: greeting, sharing, group activity, and morning message from the teacher. The components intentionally provide opportunities for students to practice social skills and connect with others.

Using predictable routines such as weekly sharing and regular common activities create security and calm.

Figure 52. Movable partitions can be used to create private spaces within a classroom to support psychosocial safety- Mäkelänmäki school ©LED Nordic

Learners are given opportinities to make choices but freedom is balanced with age-appropriate responsibility.

Figure 53. A classroom that encourages sensory relaxation through aerial yoga oga fabric and piano music- Mäkelänmäki school ©LED Nordic

Using emotionally supportive language validates frustration and reframes difficulty as effortful but manageable.

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Section 5 School Level Examples

Involving students in decision-making processes enhances their sense of agency and ownership, while clear anti-bullying structures ensure emotional safety and trust across the school community.

Psychosocial learning environments can be strengthened through structured, whole-school practices such as peer support programmes, inclusive events, and student participation.

Diffuse libraries in corridors and "talking walls" reflect the multicultural backgrounds of the student body and welcome everyone to the school community.

Inclusive recess activities and a strong focus on positive social norms further support respectful interactions and student wellbeing.

Figure 54. The school yard offers multiple opportunities for free play, collaboration, and encounters across classes- Mäkelänmäki School ©LED Nordic

Trained peer supporters help other students, organise activities, and promote inclusion, while school-wide initiatives such as anti-bullying campaigns, theme days, and integration activities for new students foster a sense of belonging, safety, and shared responsibility.

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Section 6 Beyond School Level Examples

The Mannerheim League for Child Welfare (MLL), a Finnish NGO focuses on improving the wellbeing of children, young people, and families, and supports schools through programmes such as **peer support initiatives** that contribute to creating safe, inclusive, and child-friendly learning environments.

European initiatives such as **Schools4Health** implement whole-school approaches to health and wellbeing. It advances the idea of Health Promoting Schools, where health and wellbeing are embedded throughout school policies, everyday practices, and the overall school culture.

Socioemotional learning and wellbeing is included in teacher education (and professional development) at multiple levels: personal wellbeing, support for pupils, and work with school welfare teams.

Students' learning and wellbeing are seen as interconnected and equally supported across all aspects of school life.

Figure 55. Learners' artwork displayed for the neighbourhood- Kottby lågstadieskola ©MultiLED

Figure 56. Multicultural representations, ©JYU Teacher training school

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Section 7 Final Reflections

How effectively does our learning environment support students' sense of safety, belonging, and well-being across both classroom and whole-school practices?

In what ways do our teaching approaches, school structures, and peer support systems foster positive relationships, inclusion, and student voice?

What concrete steps can we take to strengthen our psychosocial learning environment to better support all students' engagement, development, and success?

What kind of beyond-school collaborations could contribute to creating supportive psychosocial learning environments?

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Chapter 7
Physical Learning Environments

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Section 1 Theory and Definitions

Physical learning environments refer to the architectural, spatial and infrastructural aspects of the learning environment. It includes:

- **Built elements** such as walls, windows, flooring, and access.
- **Design features:** layout, proportions, spatial organization.
- **Indoor Environment Quality (IEQ)**: lighting, acoustics, temperature, ventilation.
- **Technology and digital infrastructure:** connectivity and tools.
- **Furniture and ergonomics:** flexibility, comfort, and arrangement.
- **Aesthetics and atmosphere:** safety, comfort, and environmental quality.
- **Outdoor and alternative spaces:** green, open, and sustainable areas.

School spaces constitute not a passive backdrop but an active element in shaping teaching and learning. How they are designed, furnished, and organised shapes patterns of movement, interaction, and engagement among both teachers and students.

The architectural design of schools influences practices by affording certain opportunities and constraints, which fundamentally contribute to the experiences of their inhabitants.

Figure 57. A classroom that encourages physical activity with the help of seats, hanging rings, and parallel bars- Mäkelänmäki school ©LED Nordic

Figure 58. Spaces for active breaks and relaxation- Kangasvuori daycare-school ©ILE JYU

Figure 59. Furniture supporting group work- Boberg school @Anneli Frelin HiG

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Section 2 Pre-reflective Questions

How does the physical layout of my classroom (furniture, space arrangement, lighting) support or hinder students' focus, engagement, and participation?

How does the overall school infrastructure (hallways, common areas, outdoor spaces) contribute to students' learning, wellbeing, and sense of safety?

What collective actions could our school take to redesign or repurpose spaces to better support pedagogical goals?

How do local policies or municipal decisions influence the physical conditions of our school's learning environments?

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Section 3 Why Physical Learning Environments Matter

Policy documents analysed in seven European countries treat the physical learning environment as consequential rather than neutral. The physical environment frames what is pedagogically possible by shaping encounters, movement patterns, noise, visibility, and perceptions of safety, thereby influencing learning and wellbeing. **Physical learning environment acts as an active pedagogical agent: spatial layout affects how teachers and students move, interact, and learn- creating both possibilities and constraints that shape activities, social relations, and comfort.**

Effective learning depends on the interplay between learning activities and spatial organisation. The physical environment must support continuous transitions between whole-group instruction, individual concentration, and group work. Without flexible and clearly structured spaces, opportunities for student agency, collaboration, and deep engagement are reduced. Pedagogical and physical flexibility must therefore work together.

School design interacts with organisation, staff culture, and student dynamics. **A space functions effectively only when aligned with the educational programme**; mismatches reduce pedagogical effectiveness and may increase behavioural challenges. The physical environment thus matters because it affects how teaching is organised and how students engage with learning.

Figure 60. Breakout spaces in a corridor- Iggesund school @Anneli Frelin HiG

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Section 3 Why Physical Learning Environments Matter

Teachers view that physical environments matter because they afford, or fail to afford, specific teaching and organisational practices. Spaces are evaluated in terms of how they support group organisation, supervision, and particular learning activities. If a space does not enable appropriate grouping, visibility, or pedagogical structuring, its educational potential is weakened. The material environment therefore shapes what forms of teaching and learning are realistically possible.

Safety should be highlighted as a fundamental dimension of the learning environment. Physical features such as visibility, clear boundaries, and well-defined spaces support feelings of security, and help reduce risks of bullying or conflict. Poorly designed areas, such as narrow corridors, unclear entrances, or inadequately private changing rooms, are associated with vulnerability and unsafety. Spatial design thus **affects psychosocial learning environments, well-being and the conditions for learning.**

Innovative learning environments provide spatial affordances, including open layouts, breakout rooms, and flexible furniture, that make co-location, coordination, cooperation, and collaboration possible. These features influence how teachers distribute roles, manage transitions, and share responsibility for large pupil cohorts.

When designed well, spaces support movement between whole-class instruction, small-group work, and individual learning- enabling responsive and differentiated teaching. **The physical environment matters because it shapes teacher interaction, pedagogical flexibility, and the realisation of collaborative teaching in everyday practice.**

Figure 61. Balancing transparency with private spaces- Valteri School Onerva ©Reino Tapaninen

Figure 62. Spaces for learning and relaxing- Skövde @HiG

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Section 4 Classroom Level Examples

The Erasmus+ Collaborative ReDesign with Schools - "Getting together to change school space" (**CoReD**) project provides education professionals with information about why well-designed spaces are important to education, as well as tools, resources, and inspiring case studies to better understand and, if necessary, transform learning environments.

The website provides-
- **ready-to-use tools** for teachers and schools, including instructions and templates in six languages for evaluation and reflection for transformation of school spaces
- **case studies of the tools in action** in various countries and contexts, as well as
- **user-friendly resources, guides and tool overviews** designed to support collaborative activity.

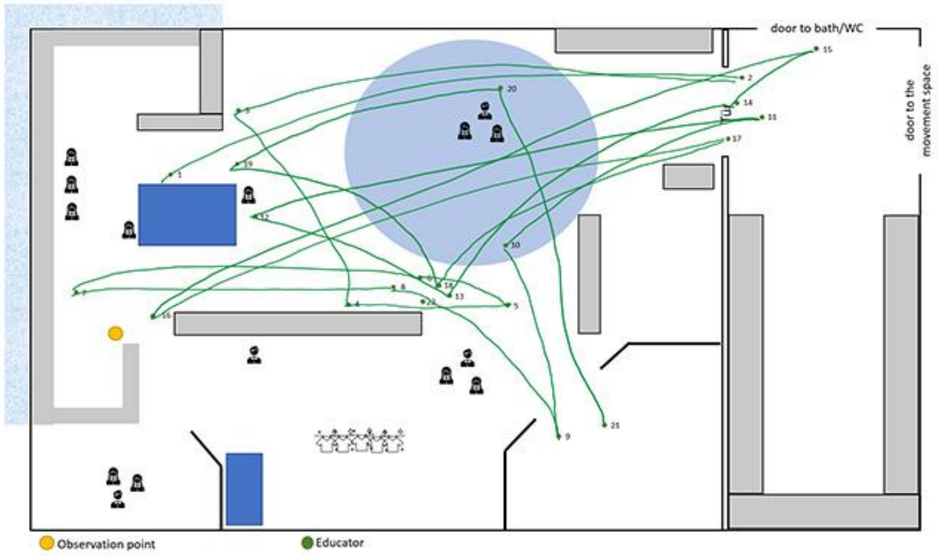

Figure 63. An example of a Cartographic classroom observation activity by CoReD demonstrating movement patterns of the educator and activities of the students ©CoReD

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Section 4 Classroom Level Examples

Flexible classroom zoning enables whole-class, small-group, and individual learning within coherent routines. These routines can help students navigate lessons with clarity and confidence.

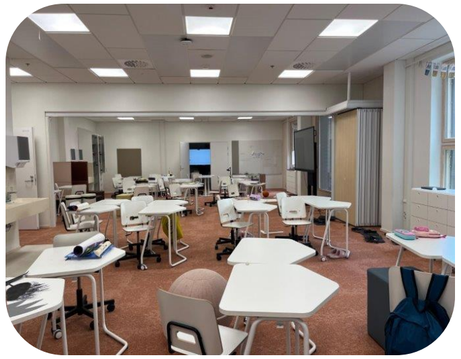

Figure 64. Walls that can be opened up between classrooms- Mäkelänmäki School ©LED Nordic

The use of alternative workstations, such as screened spaces, round tables, or “rooms within rooms” enable differentiated instruction and can support creating calm learning environments even in constrained physical settings.

Figure 65. Furniture enabling multiple configurations ©JYU Teacher Training School

Outdoor pop-up tents can be used as a differentiation strategy for learners who focus better outside or need movement breaks.

Students may be allowed to choose where to work based on their self-regulation and support needs, including quieter and more private spaces. Group work booths or quieter enclosed spaces may be a better option when open sofa areas are too distracting.

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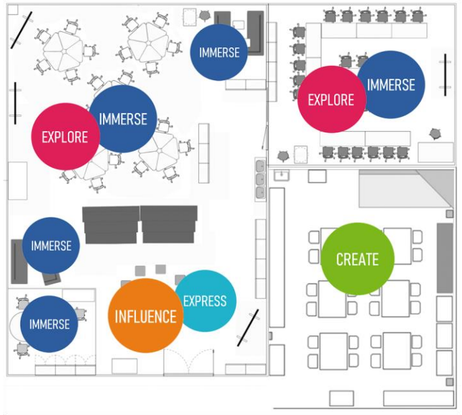
Section 5 School Level Examples

Future Classroom Lab Learning Zones created by European Schoolnet were **adapted to the Finnish Curriculum** to create zones for exploring, immersing, influencing, expressing, and creating. The idea is that the school as a whole would be versatile, and enable these ways of learning. These zones are reflected in the layout and furniture, for instance, to support immersion in quiet work (e.g., good acoustics, more closed spaces) or expression (e.g., a stage, curtains, and a stand). The model also supports considering the space requirements when selecting spaces in lesson planning.



Larger shared spaces are connected to small rooms for individual or small-group support.

Forum-like discussion areas, rather than only desk-based layouts support democratic participation.

Figure 66. & 67. Learning zones for versatile ways of learning @ Future Classroom Lab Tampere

Underused lobby areas can be converted into learning spaces by adding class walls or other acoustic adaptations.

Combining semi-open spaces, soundproofed rooms, hallway alcoves and movable furniture support varied ways of teaching.

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Section 5 School Level Examples

Designing for wellbeing consists, for instance, of multiple space types, natural materials, movement-supportive layouts, and appealing outdoor spaces.

Sensory-reduced environments- muted colours, low visual stimuli, improved acoustics, etc. support concentration for all, but particularly for students with neurodevelopment conditions such as autism.

Participatory (re)design of physical learning environments also includes building an operating culture, planning appropriate uses, and making informed decisions.

Training the staff empowers them with the learning environment competences needed to use the physical spaces effectively. Using "**learning stories**" or similar collaborative planning methods supports creating shared practices in open or shared spaces.

Figure 68. Open shared spaces with furniture allowing privacy and calm- Nummi School ©Reino Tapaninen

Flexibility of spaces enables adapting them to different teaching styles and activity types.

Creating shared guidelines for using school spaces supports their effective use. There should be opportunities, however, for teachers to influence and redesign spaces according to individual needs.

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Section 6 Beyond School Level Examples

Figures 69 & 70 The public swimming pool and its canteen are connected to the school building- Mäkelänmäki school ©LED Nordic

Figure 71. The school's sports field and hall are also available for use by sports clubs and other communities, and outdoor areas can be used by the whole neighborhood community- Mäkelänmäki school ©LED Nordic

Resources, infrastructure (e.g., physical laboratories), and pedagogical expertise are shared between regional school networks.

Regional roundtables involving health, environment, and educational sectors are used to create guidelines on the redesign of outdoor spaces for educational use.

Leisure-time centres (**"fritidshem"**) complement schooling in Sweden by linking learning to pupils' interests, play, creativity, social development, and everyday experiences. They are positioned as a structured non-formal learning environment that bridge school, home, and children's informal interests.

Funding and infrastructural interventions are prioritised for regions with less socio-economic resources.

Schools partnering with local libraries, cultural organisations, museums, and sports associations provide learners access to broader cultural, social, and civic learning experiences, extending the learning environment into the community.

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Table 4 provides examples on **how physical learning environments are related to all other core concepts introduced in this handbook**. Innovative and sustainable, flexible, versatile, and universally designed technology-enhanced spaces have the potential to support quality, equity, and inclusion in education. Educational quality, equity and inclusion depend, however, on the alignment between the pedagogical, psychosocial, and physical learning environments.

The alignement between spaces and their use requires, in turn, spatial competences. Spatial competences refer to the ability to optimize physical environments for learning.

Pedagogical and psychosocial learning environments are the key drivers of learning and wellbeing, while physical learning environments support educational aims by providing affordances for action. The effectiveness of physical learning environments depends on organisational, pedagogical, and cultural factors at classroom, school, and system levels.

1 Quality	Flexible, adaptable and versatile spaces, furniture and technologies can be used to reach high quality educational outcomes related to learning, development and wellbeing.
2 Equity and Inclusion	Spaces may support (1) physical accessibility and mobility, (2) hearing and acoustics, (3) vision and visual orientation, (4) neurodiversity, (5) cognitive support and orientation, and (6) psychosocial and emotional accessibility.
3 Innovative Learning Environments	Novel (new or improved) spaces, furniture and technology arrangements can support innovation in teaching, learning and social activity.
4 Sustainable Learning Environments	School building may serve as a model for environmental (e.g., recycling, nature connectedness), societal (e.g., inclusive spaces), cultural (e.g., displaying cultural heritage), and economic (e.g., reparing instead of purchaising) sustainability.
5 Pedagogical Learning Environments	Spaces, furniture and technology can be designed to support versatile pedagogies such as co-teaching, collaborative work, personalised learning, ourdoor learning and interdisciplinary inquiry/project-based learning.
6 Psychosocial Learning Environments	There should be spaces for encounters and gatherings. Displaying student work may improve sense of belonging. Balancing privacy and transparency fosters safety.

Table 4. Examples of how physical learning environments are related to other learning environment components discussed in this eHandbook.

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Section 7 Final Reflections

In what ways could the classroom furniture and equipment be adjusted to meet students' physical needs (e.g., movement, rest, comfort, ergonomics, privacy)?

What areas in your school building can you use for learning and socializing (e.g., quiet space for individual study or reading; spaces for computer work, group work, informal meetings, etc.)?

What mechanisms (i.e., resources, financial support, etc.) support schools in redesigning their physical environment? Who are the most important stakeholders you would collaborate with in the redesign?

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8 Conclusion

This eHandbook was created to support the design, use, and evaluation of innovative and sustainable, pedagogical, psychosocial and physical learning environments that foster quality, equity and inclusion. It is targeted at pre- and in-service teachers, headteachers and other educational stakeholders **towards developing their "learning environment competences", ie., knowledge, skills and attitudes related to learning environments.** We hope that combining theoretical perspectives and definitions with reflective questions and practical classroom, school and beyond school level examples provides a solid knowledge foundation for developing learning enviroment competences.

The handbook introduced each of the core concepts selected for the ISLE project in a separate chapter. In practice, however, learning environments should be considered as holistic ecosystems, where pedagogical, psychosocial, and technology-enhanced physical dimensions are interconnected, and innovative and sustainable design go hand-in-hand to reach high standards of educational quality, equity and inclusion.

Learning environment design entails not only 'design for use', but also continuous evaluation of the 'design in use' and 'redesign in use', thus giving continuous possibilities for the whole school community to participate.

As one of the most important inputs for the discourse on innovative learning environments (ILE), ISLE eHandbook reinforces the need to work towards not only innovative (novel or improved) but also sustainable learning environments. **Considering environmental, societal, cultural, and economic sustainability in learning environments means responding to contemporary educational needs while safeguarding the needs of future generations.**

Figure 73. Large windows provide a panoramic view of the surrounding nature- Saunalahti School © Reino Tapaninen

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