The Journal of Education Insights Vol 3 Issue 3 2025

Review

Open Access

Omniscient Pte.Ltd.

Fostering a Sense of Place: Planning Complementary Settings for Contemporary (Innovative) Learning Environments

Peter C. Lippman*

Places Created for Learning, Perth, Australia

***Correspondence to:** Peter C. Lippman, Places Created for Learning, Perth, Australia.
Email: pcl@placescreatedforlearning.com

Abstract: Innovative Learning Environments (ILEs) are transforming the ways in which school design is being conceived by introducing the notion of *integrated* and *flexible* spaces that include both classrooms and common learning areas featuring informal or breakout spaces (Lippman, 2022). This article defines these essential informal or breakout areas as *complementary settings*, highlighting their critical role in the learning ecosystem (Lippman & Matthews, 2023). However, a significant challenge reigns: secondary school teachers and learners often struggle to effectively engage within these ILEs due to a disconnect between idealistic learning theories and practical design, where flexibility concepts lack clear pedagogical grounding (Lippman, 2022). This article argues that fostering a genuine *sense of place* within these complementary settings is fundamental for effective learning, transforming mere spaces into meaningful environments that promote participation, concentration, and belonging (Lippman, 2022; Altman, 1992). To address these issues, the article investigates the foundational role of educational theory, explores *environmental perception* to understand user experiences, discusses *activity settings* for purposeful design, and examines complementary settings as the physical manifestation of these concepts. By grounding these ideas in pedagogical theory, human behavior, and current research, this article proposes an alternative framework for intentionally and attentively designing school buildings where complementary settings enhance classroom activities. Lastly, it reviews ILE literature through the lens of educational theory and environmental perception, leading to the development of a sense of place, while also exploring current conceptualization limitations to provide a rationale for these settings' purpose and offering actionable design recommendations across architectural, educational, psychological, and evidence-based perspectives, including strategies to overcome challenges like alignment and the need for shared practical knowledge.

Keywords: Innovative Learning Environments (ILEs); Complementary settings; Common learning areas; Sense of place; Environmental perception; Activity settings; Educational theory; Learning space design; Place identity; Place attachment; Flexible learning spaces

1. Introduction

The transformation of school design has introduced the concept of Innovative Learning Environments (ILEs), moving beyond traditional classrooms to embrace integrated and more flexible spaces. These contemporary designs can feature individual classrooms, classrooms connected by large operable doors, and larger shared interior spaces outside classrooms often referred to as common learning areas. While classrooms typically feature *activity settings* within them, common learning areas frequently include informal or breakout spaces. In this article, these informal or breakout spaces located within the common learning areas will be referred to as *complementary settings* emphasizing their integral function within the broader ecosystem (Lippman & Matthews, 2023). Despite these advancements, a significant challenge persists: teachers and learners in secondary schools often struggle to effectively activate these settings (Lippman, 2022). This ineffectiveness generally arises from a fundamental disconnect between theoretical concepts of learning and the practical realities faced by educators and learners. Contemporary learning theories often present idealistic perspectives of how the physical environment supports teaching, yet the design principles underpinning ILEs frequently lack a clear foundation in actual pedagogical practice. For instance, the popular design concepts of *integration* and *flexibility* are linked to educational differentiation, yet the practical connection is often tenuous.

Rather than projecting normative concepts, this article builds on the critical insight fostering a genuine *sense of place* within learning environments, specifically in complementary settings, which are not merely aesthetic considerations but are fundamental for effective learning (Lippman, 2022). When complementary settings in common learning areas in secondary schools are thoughtfully designed, varied zones are created that offer both opportunities for observation (prospect) and retreat (refuge), learners can fully participate within their environment. This attentive design transforms a mere physical space into a meaningful place, where students may concentrate more effectively and establish their personal space, temporarily claim a territory, feel secure, and develop a stronger sense of belonging leading to a feeling of ownership over their learning environment. This directly supports a transactional worldview of learning perspective (Altman, 1992), where the evolving physical setting profoundly influences the learner's experience and identity within it.

To bridge this gap and better understand complementary settings, this article will investigate the foundational role of educational theory, move into the concept of environmental perception to consider how teachers and learners might view these spaces, then discuss activity settings as a framework for designing purposeful learning niches, and lastly explore complementary settings as the physical manifestation of these ideologies. By grounding these concepts in pedagogical theory, human behavior, and current research, this article proposes an alternative way for thinking about and attentively designing physical environments where these adjacent settings truly enhance classroom activities, and in turn, classroom activities are also enriched by them. This article serves a dual purpose: first, to review existing literature on ILEs through the lens of educational theory and environmental perception, ultimately leading to the development of a *sense of place*; and second, guided by this framework and current research, to explore the limitations in how ILEs have been conceptualized, providing a rationale for understanding the role of complementary settings in the learning environment and offering actionable design recommendations.

2. Contemporary Educational Theories: Informing the Learning Environment

A *sense of place* may be defined as a deep emotional and psychological connection that individuals form with a specific location, extending beyond the physical attributes to include personal memories, meanings and cultural associations. It's shaped by a unique blend of environmental features, shared histories, and individual experiences, making particular space feel distinct and significant. Ultimately, this profound connection transforms a generic location into a meaningful *place* that often contributes to one's identity and sense of belonging. Hence, effective learning environments are more than mere architectural facades and interior spatial designs; they are not simply about altering how teachers and learners perceive and use the different settings in the school building to solve specific tasks.

Instead, they should be seen as direct extensions of pedagogical philosophies. Contemporary learning theories, like personalized learning, embodied learning, experiential learning, and situated learning theories, provide critical frameworks for guiding teaching practice, specifically how individuals learn. Ultimately, a deep understanding of the intended goals for secondary learning environments should inherently guide the design of the places meant to facilitate teaching and learning, thereby highlighting their crucial contribution to the overall learning environment.

Personalized Learning: This theory emphasizes tailoring learning experiences to meet the unique needs and preferences of individual learners (Redding, 2013; Theobald, 2013). For a secondary school learning environment, this implies offering diverse options for engagement, quiet work, and collaboration / cooperation, allowing students to *choose* locations in the physical environment that best suit their learning style and current task (**Figure 1**). While these ideas emphasize student choice, they remain broad, offering little guidance on the specific design elements in the general classroom and the common learning areas needed to support the unique ways in which people acquire knowledge.

Figure 1. Educators have mobility to move through the space to provide information and meet directly with learners.

Embodied Learning: This perspective posits that cognitive processes are deeply rooted in bodily experiences and interactions with the environment (Glenberg, 2008; Núñez et al., 1999; Stinson, 1995; Thelen et al., 2000). For learning environments, this means that physical spaces should be *dynamic* and *interactive*, allowing for movement, manipulation of objects, and engagement of multiple senses to support deeper understanding and memory formation. However, much like personalized learning, there is little information on what these environments look like in the broader secondary school learning settings beyond dedicated art, music, textiles, woodwork, and metal work rooms specifically designed for skill development, (Lippman, 2022).

Experiential Learning: Popularized by Kolb (1984), this theory argues that learning is a *cyclical process* of experience, reflection, conceptualization, and active experimentation. Consequently, learning spaces should, therefore, provide opportunities for hands-on activities, real-world problem-solving, and areas for *critical reflection* and *discussion*. Historically, applying experiential learning has largely been confined to courses in the arts and crafts, with minimal presence in the physical sciences (Lippman, 2010). Generally, this theory offers little specific guidance on how to design and curate secondary learning environments that authentically support this cyclical process.

Situated Learning: According to Lave and Wenger (1991), Barwise and Perry (1983), and Vygotsky (1978), situated learning theory posits that learning is intrinsically linked to and embedded in the social and physical context. From this perspective, knowledge is actively co-constructed as individuals participate in *authentic activities* and *social transactions* within a specific *situation* (Cole, 1995; Cole & Engeström, 1993; Devlin, 1991; Wertsch, 1995) or community of practice (Wenger, 1998). As a result, learning environments should be designed and then curated to provide access to diverse perspectives and support the dynamic interplay between individuals and their surroundings, fostering genuine cooperation (**Figure 2**). Yet, despite these clear implications, the application of this theory and the above-mentioned theories into the design of ILEs, particularly the common/shared spaces, has often lacked explicit, deliberate or systematic integration, leading to their underdevelopment (Ambrose et al., 2010; Bransford et al., 2000). This gap highlights the need to not only explore how individuals transact within their physical environments, but most importantly how individuals perceive the settings in which they learn.

Figure 2. The space has been curated to provide distinct areas where learners can choose to work.

3. Environmental Perception: The Foundation for understanding Place

Therefore, understanding how individuals experience and interpret their surroundings is fundamental to cultivating a sense of place in educational settings. William Ittleson's (1973, 1978) framework of environmental perception offers a robust perspective, encompassing cognitive, affective, interpretive, and evaluative processes. The cognitive dimension of environmental perception involves the mental process of acquiring, storing, and retrieving information about the individual's' surroundings, heavily influenced by their unique situation. Sensation, attention, and memory drive this process, allowing teachers and learners to construct mental maps to understand the physical layout of their environment (Tolman, 1948). This initial understanding is crucial for familiarizing teachers and learners with different settings, which is a prerequisite for developing a deeper connection to the places in which they learn. Whereas the cognitive dimension involves mental processes, the affective aspect addresses the emotional responses triggered by environmental stimuli (Bell et al., 2001). These emotions are situated and rooted in personal experiences, directly influencing how a setting makes a learner feel—whether it's a sense of anxiety or safety. These emotional connections are crucial for human development; for, a negative or positive affective

response is foundational to developing distress leading to disengagement or comfort and a feeling of belonging within a learning environment.

Concurrently with these processes, individuals are always and, in all ways, interpreting and evaluating their environments, thereby adding further layers of meaning and judgment to the current situations. The interpretive process is where and when learners construct meaning from their surroundings. This involves attributing significance to sensory information, shaping how they discern the qualities and purpose of a place (Casey, 1996). Through this process, learners weave sights, sounds, and personal experiences into a coherent understanding, transforming a mere location into a meaningful place imbued with personal and collective significance, which directly contributes to their *sense of place*. Like the other processes, the evaluative dimension is an ongoing appraisal of the environment (Proshansky et al., 1970). Teachers and learners simultaneously identify and consider the social dynamics and the physical characteristics of space. These appraisals, which are deeply rooted in individual experiences and preferences, influence their understanding of and relationship with each place, thereby directly impacting their psychological connection. This can lead to feelings of comfort, safety, security, and belonging, and ultimately determining whether a place becomes a meaningful component of their identity, shaping their *sense of self* (Proshansky et al., 1983).

4. Activity Settings: Designing Purposeful Learning Niches

Considering this psychological link, it becomes clear why traditional learning spaces have their limitations. Classrooms designed for uniform use and common learning areas treated as singular, undifferentiated spaces, are not only unnatural, but also incongruous with how individuals participate with others to acquire knowledge and master skills. Consequently, classrooms should offer diverse, purposeful curated activity settings and the common learning areas ought to be populated with various complementary settings to support learners' different ways of working. By reframing our understanding of classroom and of *non-classroom* spaces as intentionally designed settings with specific characteristics and pedagogical purposes, designers, educators, and researchers can move beyond generic manifestations and begin to genuinely understand their potential to support and enhance optimal learning experiences within innovative learning environments. Guiding this perspective is the research on activity settings (Tharp & Gallimore, 1997).

Conceptually, *activity settings* transform the classroom from a generic and neutral space into meaningful places where students can learn effectively. To create these settings, teachers thoughtfully arrange furniture to support smaller social groupings to:

- Connect learners with a diverse range of peers encompassing various skill levels, to enrich their learning experiences (Good & Brophy, 1990).
- Influence the quality of both verbal and non-verbal interactions that occur throughout the day (Vygotsky, 1978).
- Empower students to actively create, thoughtfully reflect upon, and adapt and accommodate their learning activities (Kolb, 1984).
- Provide learners with the freedom to explore and experiment within defined boundaries (Lewin, 1936).
- Facilitate appropriate levels of adult guidance and monitoring, balancing independence without stifling it (Tharp & Gallimore, 1989).
- Mitigate environmental stressors like crowding and noise while maximizing the benefits of attentively curated spaces (Mathews & Lippman, 2016).

Activity settings are defined areas within the classroom designed for smaller social groupings, yet they seamlessly support the activities of the whole class. This is achieved by designating locations with specific resources and furniture arrangements (Gibson, 1979; Martin, 2002) to foster cooperative group work. A layout, optimized for varied collaborative and cooperative needs, might include desks or tables arranged in groups of four along the perimeter walls of the room, with a central seminar-like style grouping for eight (**Figure 3**). These attentively curated places are designed to support behavioral, emotional, and cognitive engagement. Therefore, a classroom layout with these distinct settings not only accommodates cooperative group work and independent study but also provides opportunities for large group collaborative meetings. Purposefully curating secondary school classrooms with activity settings directly contributes to a rich and dynamic *sense of place* for teaching and learning.

Figure 3. Within the common learning area are a variety of complementary settings where cooperative work and independent study can take place.

5. Understanding and Defining Complementary Settings

While common learning areas often feature grand stairs, a standard design element in many contemporary secondary school buildings, these are generally planned as singular spaces. These spaces typically include areas termed *informal spaces* and/or *breakout spaces* (Pearlman, 2014), often furnished with whiteboards, varied seating, and writable surfaces (Young, Imms, & Cleveland, 2019). Yet, as Lippincott (2009) notes, *breakout spaces* and *commons* are often ill-defined (**Figure 4**). Consequently, the pedagogical purpose and integration of these settings within the overall learning environment are frequently underexplored, and their design rationale frequently often lacks explicit explanation.

Figure 4. The arrangement of furniture in this common space does not clearly articulate distinct functional zones, resulting in a cluttered or undifferentiated physical environment for various activities.

This lack of clarity persists despite the view within the design, education, and research professions that these areas can support a variety of activities (Fielding, 2022). However, a lack of clearly defined working areas can lead to noise, competition for space and, most importantly, learners going off task (Carvalho

and Yeoman, 2018; Lippman, 2022). Therefore, like classrooms, the notion of defining secure, legible, and comfortable spaces for smaller social groupings, potentially for no more than 6 learners, must be extended to the common learning area. These defined locations, which manifest as differentiated learning places within common learning areas should ideally be intentionally and attentively planned in relation to adjacent classrooms (PEHKA, 2012).

Furthermore, these places ought to be understood as complementing contemporary teaching and social constructivist learning theories (Matthews, Andrews, & Adams, 2011), emphasizing learning as a *situated* process enhanced by dynamic social contexts (Jamieson, 2009; Lave & Wenger, 1991). Such settings empower students with control and ownership over their learning (Bennett, 2003; Keating & Gabb, 2005; Somerville & Harlan, 2008; Lippman, 2022). Considering their inherent purpose, the designation *complementary settings* is particularly apt, emphasizing their integral and interconnected function within the broader learning ecosystem and their potential to foster a richer *sense of place* thereby maximizing their pedagogical value and high levels of student engagement.

Architecturally Defined: Research can inform the architectural design of complementary settings as attentively planned *non-classroom / out-of-classroom configurations* in the common learning area of school buildings (Jamieson, 2009; Lippincott, 2009; Lippman, 2022). Intended to function in relationship with classrooms, these settings may include built-in and movable furniture (**Figure 5**). A recommended design approach provides each classroom with its own complementary setting, giving teachers direct visual, auditory, and physical access to these areas to support individual and small group work (Lippman, 2022). This arrangement allows teachers to expand their classrooms, promoting opportunities for learners to choose where they work (Lippman, 1995; 2022). For all intents and purposes, these extensions offer students a place to retreat from classroom distractions and re-engage in their learning (Lippman, 2022), contributing to a personal *sense of place* and autonomy within the larger environment.

Figure 5. Common learning area with a variety of complementary settings where learners can settle and concentrate on their work.

Educationally Defined: Educationally, the thoughtful and responsive design of complementary settings in both primary and secondary schools is paramount. These zones should foster distinct learning experiences that extend activities difficult to undertake in a classroom. Attentively conceived, these places have the potential to support high levels of student social, cognitive, and behavioral engagement (Finn & Zimmer,

2012; Fredericks & McColskey, 2012; Sciarra & Seirup, 2008). Given their intentional adjacency to classrooms, educators can maintain consistent accessibility to learners (Tharp & Gallimore, 1997), a crucial factor in bolstering engagement, especially with secondary school students. When utilized accordingly, teachers are moving between the classroom and these out-of-classroom settings, the research strongly indicates that educators and learners exhibit high levels of cognitive, social, and behavioral engagement (Finn & Zimmer, 2012; Fredericks & McColskey, 2012; Lippman, 2022; Sciarra & Seirup, 2008). This interconnectedness creates a dynamic learning ecosystem where varied pedagogical approaches and learner-centered activities can flourish, strengthening the pedagogical sense of place by providing diverse environments for different learning needs.

Psychologically Defined: Psychologically, the design of complementary settings holds significant implications for learners. Designed as perceptually distinct environments, they support learning experiences that are qualitatively different from a traditional classroom, thereby catering to diverse cognitive and sensory needs. By providing varied hard and soft architectural affordances, these settings can positively influence learners' transactions, cognitive processing, and behavioral responses (Lippman, 2022). When there is a deliberate physical and visual connection to the main classroom, these settings foster psychological security and accessibility to educators (Tharp & Gallimore, 1997), enhancing feelings of belonging and encouraging high levels cognitive, behavioral, and social engagement. This perceptual interconnectedness establishes a supportive learning environment that empowers and permits students to attune their physical environment according to individual learning preferences and needs, deepening their psychological sense of place.

6. Evidence-Based Design: Planning and Designing Complementary Settings

Beyond the architectural, pedagogical, and psychological aspects of the learning environment, the findings from a multiple case study by Lippman (2022) offer insights into effective strategies for planning and designing these settings. This qualitative study revealed that these settings not only provide additional places for students to work but also offer learners with a safe haven from classroom disruptions—a fundamental human need for concentration. , When complementary settings are attentively planned, learners:

- Achieve focus while maintaining situational awareness, allowing them to comfortably settle and concentrate on their tasks (Lippman, 2022).
- Establish a sense of personal territory, with horizontal surfaces (steps, floor, couch arms, tables) allowing learners to organize their belongings and feel ownership over their space (Lippman, 2022).
- Function optimally because settings are perceived as safe, comfortable, legible, permanent, uncrowded, quiet, and protected (Martin, 2002; Sfard, 1998; Lave & Wenger, 1991).
- Foster a harmonious community (PEHKA, 2012; Carvalho & Yeoman, 2018), as distinct settings prevent groups from competing for space and necessary resources.
- Support natural gathering inclinations, with complementary settings organically encouraging productive small working groups, often where individuals work on assigned tasks within a collaborative framework (Lippman, 2022).

Although complementary settings exist outside and adjacent to classrooms, they must also be understood as distinct locations within the common learning area; for, attentively designed complementary settings can enhance student learning and well-being by clearly communicating the types of activities best suited for each area—for example, a rectangular table with four chairs located against a wall with an electrical outlet indicates that it might be support research or laptop work. These differentiated places reinforce that learning extends beyond classroom walls. Building on the findings, complementary settings function optimally when they are planned adjacent to and outside each classroom (Lippman, 2022; PEHKA, 2012) particularly along walls and with corners (**Figure 6**), reinforcing a sense of safety and comfort as these places are perceived as legible, permanent, uncrowded, quiet, and protected. Hence, these become places of *prospect* and *refuge* (Hildebrand, 1991), allowing learners to re-engage with acquiring knowledge and mastering skills. These differentiated places manifest in the built environment such as:

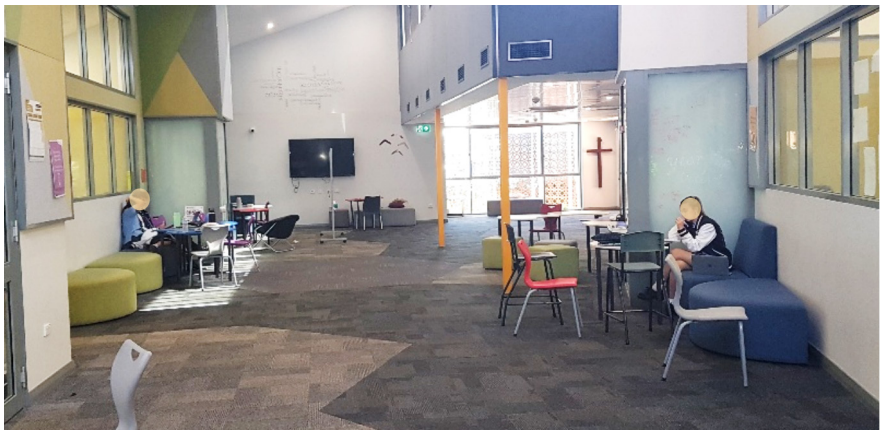

Figure 6. Complmentary settings function optimally when they are planned along walls and corners.

• **Group Rooms/Seminar Rooms** enclosed spaces for small groups of one to eight learners. These settings allow learners to concentrate on independent, one-on-one, and cooperative work, allowing concentration away from the larger class.

• **Alcoves** are semi-enclosed learning areas, often found in recesses along walls outside classrooms or along the corridors. They are designed to support formal and informal transactions and can accommodate individual or small group work for up to four to six people.

• **Nodes** are dynamic places typically located at convergence points such as grand staircases. They serve as significant features that can support a range of activities from large formal gatherings to small group work and individual study.

Nevertheless, simply locating complementary settings outside classrooms is insufficient. Their capacity and intended purpose are crucial (Jamieson, 2009). Overcrowding leads to negative consequences like noise and lack of individual space (Lawson, 2001; Lippman, 2022), hindering cognitive and behavioral engagement (Jamieson, 2009; Lippman, 2022; Moore, 1996/1979; Moore, 1986). To effectively support learning and foster a strong sense of place, complementary settings require:

• Availability: to support varied group sizes working discreetly ensuring ample space to avoid disruption (Lippman, 2022).

• Adaptability: To enable some reconfiguration of furniture and portable items for different activities, like arranging chairs for cooperative group work.

• Multi-dimensionality: To accommodate different types of activities at the same time, such as cooperative and independent tasks.

• Accessibility: To ensure teachers can directly access students for guidance and to monitor their progress (**Figure 7**).

Figure 7. Complementary settings require availability, adaptability, multidimensionality, and accessibility.

7. Challenges to Place-Making in Contemporary Learning Environments

The narrative surrounding 21st-century school architecture suggests a shift from traditional classrooms to fluid, designs that are *flexible* and *integrated spaces*. However, research highlights significant incongruencies between these design strategies for the learning environment and educational practice, hindering the development of a strong sense of place (Rönnlund et al., 2020). These challenges primarily stem from issues with alignment and the development of shared practical knowledge for understanding the function of complementary settings.

Alignment Challenges and Resistance to Change: Research reveals complex dynamics and power imbalances among stakeholders in ILE design. The core challenge isn't the inherent inability of these spaces to support modern teaching but rather the belief in a singular solution for educational improvement (Rönnlund et al., 2020). For ILEs to succeed, their design must align with the school's educational vision. However, achieving this alignment can be challenging. Schools often exhibit two contrasting orientations: one favoring traditional, bounded structures—conventional school design—and another advocating for open, fluid environments—innovative school design (Nair & Fielding, 2005). These tensions are often a consequence of the conflict between subject-based and interdisciplinary teaching, with secondary school teachers favoring more traditional approaches (Sigurðardóttir & Hjartarson, 2016). This frequently leads to resistance to change within the learning environment's cultures and communities of practice (Lippman, 2022; Rönnlund et al., 2021). While overcoming this resistance and developing a shared vision can take time, it is essential for creating a successful ILE or, better yet, a dynamic place for learning that can foster a cohesive sense of place.

Bridging the Gap: Teachers' and Students' Shared Practical Knowledge: Even when settings become *Flexible Learning Spaces* (Morris, Imms, Dehring, 2023)—designed to foster student-centered and collaborative learning implementation can be problematic. These predicaments often stem from several sources. First, visual symbolism and cultural affordances within these settings can inadvertently reinforce traditional teaching strategies. Second, teachers' and students' interpretations of design elements frequently conflict with their intended use (Lippman, 2022). Furthermore, research indicates that the effectiveness of innovative educational settings isn't uniform across diverse student populations (Könings & Seidel, 2025). This reality highlights that simply providing spaces that include flexible furniture is insufficient; educators must proactively address potential challenges and personalize support for the overall cohort or for specific student groups. These adjustments can be made ongoing throughout or periodically during the school year.

To truly disrupt traditional practices, teachers need the skills to understand and utilize the space effectively. This underscores the critical need for teachers to develop *spatial competence*—a keen awareness of visual learning space elements—to fully leverage *Flexible Learning Spaces* for innovative pedagogy (Connor, 2023). The acquisition of this knowledge can be acquired and reinforced through ongoing professional development and workshops within the learning environment (Dyck & Lippman, 2023; Lippman, 2022). This fosters a shared practical knowledge among staff on how best to leverage the opportunities of both the hard and soft architectural affordances of the spaces (Lippman, 2023), which is crucial for collectively building a greater sense of place.

8. Cultivating a Sense of Place in Contemporary Learning Environments: Shamai's Stages and Current Realities

Acquiring a sense of place is an active and transformative process, deeply influenced by a learner's evolving *place identity* and *place attachment* (Guiliani, 2003; Low & Altman, 1992; Scannell & Gifford, 2010). As this identity develops, learners move from peripheral to full participation, eventually contributing to the place's collective understanding. Shamai (1991) describes this evolution through seven progressive stages, each shaping teachers' and learners' sense of place or displacement. These stages begin with local awareness and can lead towards involvement or indifference. Shamai's initial stages (1-3) involve primarily cognitive engagement, where learners interpret cues from their social and physical environment, potentially fostering high levels of behavioral engagement. In contrast, higher stages (4-7) incorporate cognitive, behavioral,

and social engagement. Each of these stages will be examined in the context of ILEs, differentiating between traditional classrooms and common learning areas.

1. Local Awareness: Learners are familiar with the physical environment, but without deep understanding or connection.

○ Classrooms: High local awareness due to familiarity and established both explicit and implicit pedagogies (Weinstein, 1979).

○ Common Learning Areas: Often lack initial familiarity. Teachers and learners may feel unsettled as they have no pre-existing memories, feelings, meanings, or judgments about how to activate these more open spaces (Lippman, 2022).

2. Symbol Recognition: Learners recognize specific features, but without strong emotional attachment.

○ Classrooms: Learners quickly recognize and understand key features like group tables, desks, and the teacher's position, contributing to a predictable and defined environment.

○ Common Learning Areas: While learners may recognize features, the inconsistency and disorganization often present in these shared neutral spaces can hinder meaningful recognition. They can complement classrooms but often lack the legibility and differentiation needed for clear symbolic understanding, leading to competition for space (Frelin & Grannas, 2020).

3. Belonging: Learners develop an emotional connection and feel accustomed to the environment.

○ Classrooms: Emotional connections and a sense of belonging readily form as learners are assigned spaces or choose preferred work areas, fostering comfort and identity within the structured setting (Moore, 1996/1979).

○ Common Learning Areas: Research confirms that accommodation is frequently unsuccessful, leading to negative emotional responses such as alienation, stress, anxiety, and frustration due to noise, crowding, and competition for resources (Carvalho and Yeoman, 2018; Jamieson, 2009; Lippman, 2022). These environments often fail to cultivate a strong sense of belonging.

4. Symbol Respect (or Disdain): Learners appreciate and value the symbols and features of the place.

○ Within classrooms and common learning areas, teachers and learners may recognize and respect school symbols. However, it's crucial to acknowledge varied individual interactions and opinions regarding common learning areas, as not all teachers and learners will develop the same level of respect or appreciation if their basic needs for belonging are not met (Tuan, 1977).

○ Lack of belonging can, over time, manifest as symbolic disdain, where the very symbols intended to foster unity and pride become targets of indifference, subtle disregard, or even overt disrespect. When individuals feel disconnected or marginalized within the learning environment, the emblems of that institution can lose their positive meaning and instead become reminders of unfulfilled needs or negative experiences.

5. Attachment (or Detachment): The overall place becomes personally significant to the learner.

○ Due to the considerable time spent in school, the learning environment profoundly influences adolescents. A sense of place is a direct outcome of developing *place attachment* and *place identity*. When given choice and opportunities to be and work effectively, learners can develop strong attachments in classrooms and, ideally, in well-designed common learning areas.

○ Conversely, feelings of detachment lead to a sense of being out of place (Tuan, 1977).

6. Goal Alignment (or Misalignment): Learners gain initial familiarity with the goals, vision, and values of the place.

○ Effective educational models, whether in traditional settings or ILEs require careful design of classrooms and common learning areas, planned by educators to supplement learning, and reinforced by ongoing professional development.

○ The alignment between design, pedagogy, and shared understanding ensures the environment supports objectives and fosters congruence with individual belief systems. A disconnect between theoretical goals and practical implementation, however, leads to misalignment with the pedagogy of the place (Leiringer & Cardellino, 2011; OECD, 2001).

7. Involvement (or Indifference): Teachers and learners actively participate in shaping and contributing to the environment.

○ Meaningful place-based learning fosters active participation, empowering teachers and learners to shape their evolving environment (Ingold, 2000).

■ Classrooms: Since furniture can be re-configured to create distinct activity settings, these spaces can evolve and become dynamic and meaningful places for learning.

■ Common Learning Areas: Over time, with shared practical knowledge, and support from leadership, the affordances (the perceptual properties) within the physical environment can be activated. This enables individuals to curate / attune complementary teaching and learning settings where none explicitly exist (Lippman 2022).

○ A strong sense of place encourages full participation. Continuous professional development for operationalizing open learning environments encourages this involvement. Conversely, a purely visionary approach to ILEs without practical support can breed indifference, compounded by teacher resistance to modern pedagogical practices (Sigurðardóttir & Hjartarson, 2016). This can lead to a regression to traditional practices and segregated designs (Byers & Lippman, 2018; Harris, 2023).

9. Conclusion: Designing for a Deep Sense of Place

This article has illuminated a critical gap in the current understanding and design of Innovative Learning Environments (ILEs), where pedagogical theories (Ambrose et al., 2010; Bransford et al., 2000), and design principles often fail to adequately integrate the profound influence of human behavior and environmental perception on learning(Piaget, 1952; Glenberg, 2008; Núñez et al., 1999; Thelen et al., 2000). By first grounding the discussion in key educational theories such as personalized, embodied, experiential, and situated learning, this article established their inherent implications for spatial design. It then introduced Ittleson's (1973, 1978) framework of environmental perception as a vital lens for understanding how teachers and learners experience and make sense of physical spaces. Moving to the concept of activity settings (Matthews & Lippman, 2016; Tharp & Gallimore, 1997), the article demonstrated how purposeful design can transform a generic/neutral space into meaningful places, directly contributing to a sense of belonging and engagement. This led to a detailed examination of complementary settings, underscoring their architectural, educational, and psychological definitions, and how their thoughtful design can provide crucial elements like prospect and refuge (Hildebrand, 1991).

The application of Shamai's (1991) stages leading to a sense of place within the context of contemporary (innovative) learning environments, combined with current research, revealed significant challenges in the operationalization and perception of classrooms and common learning areas. Often characterized by a lack of legibility, differentiation, and effective pedagogical management, these spaces frequently elicit negative emotional responses and hinder the development of a positive sense of place for both teachers and learners (Jamieson, 2009; Lippman, 2022). This disconnect between the intended purpose of these modern learning environments and the experiences lived within them underscores the critical need for a reconceptualization of how these environments are designed and utilized. Additionally, this article investigated how resistance to change within school cultures (Byers, 2023; Rönnlund et al., 2020), often stemming from tensions between traditional subject-based approaches and innovative pedagogies (Sigurðardóttir & Hjartarson, 2016), impedes the effective use of these spaces. This emphasizes the paramount need for developing a shared vision and dedicated professional development (Dyck & Lippman, 2023; Lippman, 2022) to cultivate spatial competence among educators (Connor, 2023) and foster a collective commitment to place-making.

Ultimately, this article advocates for a more intentional and attentive approach to designing physical learning environments. It proposes a shift towards curating activity settings that are purposefully integrated with classroom activities and crafting complementary settings that can supplement activities originating from classrooms, grounded in pedagogical theory, and highly responsive to the principles of environmental perception and activity settings. By fostering a deeper understanding of how teachers and learners transact with and perceive these spaces, educators and designers can collaborate to create learning environments that truly complement pedagogical goals, cultivate a strong sense of place, and ultimately enhance the learning experience for all. The recommendations presented lay the groundwork for future research which are aimed at realizing the full potential of innovative learning environments

and ensuring that design truly serves pedagogy in cultivating rich, meaningful places for learning, moving beyond mere physical space to create environments where every individual not only feels a profound sense of belonging, but can develop holistically.

References

[1] Ambrose, S. A., Bridges, M. W., DiPietro, M., Lovett, M. C., & Norman, M. K. (2010). *How learning works: Seven research-based principles for smart teaching*. Jossey-Bass.

[2] Barwise, J., & Perry, J. (1983). *Situations and attitudes*. MIT Press.

[3] Bell, P. A., Greene, T. C., Fisher, J. D., & Baum, A. (2001). *Environmental psychology*. Harcourt College Publishers.

[4] Bennett, S. (2003). Learning commons: A learning-centered approach to services and facilities. *American Library Association*.

[5] Bransford, J. D., Brown, A. L., & Cocking, R. R. (Eds.). (2000). *How people learn: Brain, mind, experience, and school*. National Academy Press.

[6] Byers, T. (2023). Not Buying into the Hype of Contemporary or New School Learning Spaces: One School's Attempt at Interrogating Their "Actual" Impact on Teaching and Learning. In P. C. Lippman & E. A. Matthews (Eds.), *Creating Dynamic Places for Learning* (pp. 253-266). Springer, Singapore.

[7] Byers, T., & Lippman, P. C. (2018, February 7). Classroom design should follow evidence, not architectural fads. *The Conversation*.

[8] Carvalho, L., & Yeoman, P. (2018). Connecting physical and conceptual structures: The role of designed artefacts in task-based learning. *British Journal of Educational Technology, 49*(5), 947–959.

[9] Casey, E. S. (1996). How to get from space to place in a fairly short stretch of time: Phenomenological prolegomena. In S. Feld & K. H. Basso (Eds.), *Senses of place* (pp. 13–52). School of American Research Press.

[10] Cole, M. (1995). Socio-cultural-historical psychology: Some general remarks and a proposal for a new kind of cultural-genetic methodology. In J. V. Wertsch, P. Del Rio, & A. Alvarez (Eds.), *Sociocultural studies of mind* (pp. 187–214). Cambridge University Press.

[11] Cole, M., & Engeström, Y. (1993). A cultural-historical approach to distributed cognition. In G. Salomon (Ed.), *Distributed cognitions: Psychological and educational considerations* (pp. 1–46). Cambridge University Press.

[12] Connor, L. (2023). Possibilities, Perceptions and Practices: Visibilising the Impact of Flexible Learning Spaces: Visiblising Pedagogies. *Video Journal of Education and Pedagogy, 8*(1), 1-14.

[13] Devlin, K. (1991). *Logic and information*. Cambridge University Press.

[14] Dyck, J.A., Lippman, P.C. (2023). Creating Dynamic School Buildings that Activate the Learner and the Learning Process. In: Lippman, P.C., Matthews, E.A. (eds) *Creating Dynamic Places for Learning*. Springer, Singapore.

[15] Fielding, R. (2022, June 30). How to design a learning commons. *Getting Smart*. https://www.gettingsmart.com/2022/06/30/how-to-design-a-learning-commons/

[16] Finn, J. D., & Zimmer, K. S. (2012). Student engagement: What is it? Why does it matter? In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 97–131). Springer.

[17] Fredericks, J. A., & McColskey, W. (2012). The measurement of student engagement: A comparative analysis of various methods and student self-report instruments. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 763–782). Springer.

[18] Frelin, A., & Grannäs, J. (2020). Teachers' use of learning spaces: The interplay between space, pedagogy and learning activities in open-plan school environments. *Education Inquiry, 11*(4), 346–362.

[19] Gibson, J. J. (1979). *The ecological approach to visual perception*. Houghton Mifflin.

[20] Glenberg, A. M. (2008). Toward the integration of bodily states, language, and action. In G. R. Semin & E. R. Smith (Eds.), *Embodied grounding: Social, cognitive, affective, and neuroscientific approaches* (pp. 43–70). Cambridge University Press.

[21] Good, T. L., & Brophy, J. E. (1990). *Educational*

psychology: A realistic approach (4th ed.). Longman.

[22] Guiliani, M. V. (2003). Theory of attachment and place attachment. In M. Bonnes, T. Lee, & M. Bonaiuto (Eds.), *Psychological theories for environmental issues* (pp. 137–170). Ashgate.

[23] Harris, A. (2023, July 17). 40-year-old fad as NSW shuts door on open-plan classrooms. *The Sydney Morning Herald*. https://www.smh.com.au/national/nsw/end-of-a-40-year-old-fad-as-nsw-shuts-door-on-open-plan-classrooms-20230716-p5dok4.html

[24] Hildebrand, G. (1991). *The Wright space: Pattern and meaning in Frank Lloyd Wright's houses*. University of Washington Press.

[25] Ingold, T. (2000). *The perception of the environment: Essays on livelihood, dwelling and skill*. Routledge.

[26] Ittleson, W. H. (1973). Environment perception and contemporary perceptual theory. In W. H. Ittelson (Ed.), *Environment and cognition* (pp. 1–19). Seminar Press.

[27] Ittleson, W. H. (1978). Environmental perception and urban experience. *Environment and Behavior, 10*(2), 193–213.

[28] Jamieson, P. (2009). Learning the lessons of the learning commons. In P. Jamieson (Ed.), *Place and space: The design of new learning environments*. [Publisher details needed].

[29] Keating, S., & Gabb, R. (2005). The learning commons: A new model for higher education. *Journal of Library Administration, 43*(1/2), 143–157.

[30] Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice-Hall.

[31] Könings, K. D., & Seidel, T. (2025). [Publication details required].

[32] Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.

[33] Lawson, B. (2001). *The language of space*. Architectural Press.

[34] Leiringer, R., & Cardellino, P. (2011). Tales of the unexpected: Exploring the impact of school building design on the Nutzer and their organisations. *Building Research & Information, 39*(4), 360–372.

[35] Lewin, K. (1936). *Principles of topological psychology* (F. Heider & G. M. Heider, Trans.). McGraw-Hill.

[36] Lippincott, J. K. (2009). Learning spaces: Involving faculty. *EDUCAUSE Review, 44*(3), 18–25.

[37] Lippman, P. C. (1995). *The meaning of constructed objects* [Unpublished master's thesis] The Graduate Center, The City University of New York.

[38] Lippman, P. C. (2022). *Understanding the Function of Complementary Settings in Contemporary Learning Environments* [Doctoral thesis, La Trobe University] La Trobe University Research Repository.

[39] Lippman, P.C. (2023). An Ecological Approach for Creating Dynamic Learning Environments. In: Lippman, P.C., Matthews, E.A. (eds) *Creating Dynamic Places for Learning*. Springer, Singapore.

[40] Low, S. M., & Altman, I. (1992). Place attachment: A conceptual inquiry. In I. Altman & S. M. Low (Eds.), *Place attachment* (pp. 1–12). Plenum Press.

[41] Martin, S. H. (2002). The place of space in the language of science. [Publication details needed].

[42] Matthews, C. E., Andrews, V., & Adams, P. (2011). Social constructivism and learning commons: How might a university library create a truly social learning environment? *Codex: The Journal of the Louisiana Chapter of the ACRL, 1*(3), 33–48.

[43] Matthews, P., & Lippman, P. C. (2016). [Publication details needed].

[44] Moore, G. T. (1986). Effects of the spatial definition of behavior settings on children's behavior: A quasi-experimental field study. *Journal of Environmental Psychology, 6*(3), 205–231.

[45] Moore, G. T. (1979). Environment-behavior studies. In J. C. Snyder & A. J. Catanese (Eds.), *Introduction to architecture* (pp. 96-117). McGraw-Hill.

[46] Morris, J.E., Imms, W., Dehring, A. (2023). The Relationship Among Classroom Furniture, Student Engagement and Teacher Pedagogy. In: Morris, J.E., Imms, W. (eds) Teachers as Researchers in Innovative Learning Environments. Springer, Singapore. https://doi.org/10.1007/978-981-99-7367-5_9

[47] Nair, P., & Fielding, R. (2005). *The language of school design: Design patterns for 21st century schools*. DesignShare.

[48] Núñez, R. E., Edwards, L. D., & Matos, J. F. (1999). Embodied cognition as grounding for situatedness and context in mathematics education. *Educational Studies in Mathematics, 39*(1/3), 45–65.

[49] Organisation for Economic Co-operation and Development (OECD). (2001). *Schooling for tomorrow: Learning to change: OECD scenarios and strategies*. OECD Publishing.

[50] Pearlman, B. (2014). *Designing new learning environments*. [Publisher details needed].

[51] PEHKA. (2012). *Responsive Research Report*. (Unpublished report). Projects for Environmental Health Knowledge and Action, Inc.

[52] Piaget, J. (1952). *The origins of intelligence in children* (M. Cook, Trans.). International Universities Press. (Original work published 1936)

[53] Proshansky, H. M., Fabian, A. K., & Kaminoff, R. (1983). Place-identity: Physical world socialization of the self. *Journal of Environmental Psychology, 3*(1), 57–83.

[54] Proshansky, H. M., Ittelson, W. H., & Rivlin, L. G. (Eds.). (1970). *Environmental psychology: Man and his physical setting*. Holt, Rinehart and Winston.

[55] Redding, S. (2013). *Personal competencies in personalized learning*. Center on Innovations in Learning.

[56] Rönnlund, M., Bergström, P., & Tieva, Å. (2020). Exploring school principals' role in implementing innovative learning environments: a Bernsteinian analysis. *Journal of Educational Administration and History, 52*(3), 271–286.

[57] Rönnlund, M., Bergström, P., & Tieva, Å. (2021). Teachers' collegial collaboration in innovative learning environments – conditions and challenges. *Scandinavian Journal of Educational Research, 65*(6), 1030–1043.

[58] Scannell, L., & Gifford, R. (2010). Defining place attachment: A tripartite organizing framework. *Journal of Environmental Psychology, 30*(1), 1–10.

[59] Sciarra, D. T., & Seirup, H. J. (2008). The prism of practice: School psychologists' conceptions of student engagement. *School Psychology Review, 37*(2), 166–183.

[60] Sfard, A. (1998). On two metaphors for learning and the dangers of choosing just one. *Educational Researcher, 27*(2), 4–13.

[61] Shamai, S. (1991). Sense of place: An empirical measurement. *Geoforum, 22*(3), 347–358.

[62] Sigurðardóttir, A. K., & Hjartarson, T. (2016). Teachers' voices: Teachers' perspectives on the advantages and disadvantages of open-plan schools. *Scandinavian Journal of Educational Research, 60*(4), 410–424.

[63] Somerville, M. M., & Harlan, S. (2008). From information commons to learning commons: A metamorphosis. *portal: Libraries and the Academy, 8*(2), 183–198.

[64] Stinson, S. W. (1995). Body of knowledge. *Educational Theory, 45*(1), 43–54.

[65] Tharp RG, Gallimore R. (1989). *Rousing Minds to Life: Teaching, Learning, and Schooling in Social Context*. Cambridge University Press.

[66] Tharp, R. G., & Gallimore, R. (1997). *Cultural contexts in teaching and learning: A socio-cultural approach*. Cambridge University Press.

[67] Thelen, E., Schöner, G., Scheier, C., & Smith, L. B. (2000). The dynamics of embodiment: A field theory of infant perseverative reaching. *Behavioral and Brain Sciences, 24*(1), 1–86.

[68] Theobald, M. (2013). *Personalized learning: Meeting the needs of diverse learners*. [Publisher details needed].

[69] Tolman, E. C. (1948). Cognitive maps in rats and men. *Psychological Review, 55*(4), 189–208.

[70] Tuan, Y.-F. (1977). *Space and place: The perspective of experience*. University of Minnesota Press.

[71] Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

[72] Weinstein, C. S. (1979). The physical environment of the school: A review of the research. *Review of Educational Research, 49*(4), 577–610.

[73] Wertsch, J. V. (1995). Sociocultural research in the learning sciences: Vygotsky and Bakhtin. *The Journal of the Learning Sciences, 4*(1), 51–57.

[74] Young, E., Imms, W., & Cleveland, B. (2019). Furnishing the future of learning: A critical review of research on learning environment furniture. *Journal of Learning Spaces, 8*(1).