

BUILT ENVIRONMENT EDUCATION AND PROJECT-BASED LEARNING THROUGH COLLABORATION BETWEEN FORMAL AND NON-FORMAL EDUCATORS

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Abstract

Current educational debates increasingly emphasise creativity, critical thinking, collaboration, student agency and real-world problem solving. Yet schools and teachers are often expected to address these aims within fragmented timetables, subject-based curricula and limited institutional capacity. This paper examines how Built Environment Education and Project-Based Learning can respond to this tension by connecting learning to the places students use every day. The paper asks what Built Environment Education adds to Project-Based Learning when the built environment becomes the object of inquiry, and what forms of collaboration between formal educators and non-formal built-environment educators support the application of such learning in schools. It develops a practice-informed conceptual framework by connecting literature on Project-Based Learning, principles and repositories from Built Environment Education, and school-based pilot experiences in which students observed, mapped, discussed and proposed improvements to their learning environments. The paper argues that Built Environment Education adds specific value to Project-Based Learning because students engage with classrooms, corridors, schoolyards, streets and neighbourhoods as places that shape inclusion, sustainability, safety, belonging and civic participation. Non-formal built-environment educators can support this process by bringing spatial expertise, design methods, facilitation skills and commitment to real-world learning. The conclusion is that co-curricular and extracurricular collaboration should not be understood as marginal to school education. It can act as a practical gateway for introducing place-based, project-based and collaborative learning into everyday school life. Beyond Built Environment Education, the paper also points to a broader approach: schools may need structured collaboration with external educational actors in order to make real-world learning more applicable, sustained and socially meaningful.

Keywords: *Built environment education, project-based learning, place-based learning, formal–non-formal educator collaboration, student agency.*

1. Introduction

Schools are increasingly expected to prepare students for complex social, environmental and technological futures. International education frameworks place growing emphasis on creativity, critical thinking, collaboration, student agency and the capacity to act in real-world situations (Organisation for Economic Co-operation and Development [OECD], 2019, 2025). These aims are widely accepted in principle, but they are difficult to implement within school systems shaped by fragmented timetables, subject-based curricula and limited opportunities for sustained interdisciplinary work. Teachers are asked to support more active and transformative forms of learning, often with little time and few accessible models for implementation.

Project-Based Learning offers one response to this challenge. It organises learning around meaningful questions, sustained inquiry, collaboration, the creation of concrete outputs and reflection on real-world problems (Bell, 2010; Krajcik & Shin, 2014; Thomas, 2000). It is particularly relevant when students investigate issues close to their own experience. However, Project-Based Learning also requires conditions that are not always easy to generate inside schools alone: flexible time, interdisciplinary expertise, facilitation capacity and links with contexts beyond the classroom.

This paper examines these conditions through the specific field of Built Environment Education which refers here to education about, through and for the built environment. It helps students understand

how buildings, streets, public spaces, neighbourhoods and landscapes are shaped, used and transformed (International Union of Architects, 2019). Its value is not limited to architecture as a professional field. The built environment is part of everyday life and influences safety, accessibility, environmental quality, belonging, social interaction and civic participation. For students, the school itself is one of the most immediate built environments: a place where spatial arrangements affect movement, learning, inclusion, comfort and relationships. Built Environment Education therefore brings a distinctive contribution to Project-Based Learning. It gives inquiry a concrete spatial object and a public dimension. A classroom, corridor, schoolyard or street can become a site of investigation. Through mapping, observation, interviews, design scenarios and public presentation, students can connect knowledge from different subjects with lived experience and collective decision-making. Places are pedagogical contexts shaped by ecological, cultural, political and economic relations (Gruenewald, 2003) and place-based approach is hence connected with sustainability education that emphasises informed action and participation in transformation (UNESCO, 2020).

The paper is guided by two research questions: What does Built Environment Education add to Project-Based Learning when the everyday built environment becomes the object of inquiry? Which collaborative conditions help formal and non-formal educators support the application of this approach through co-curricular and extracurricular formats?

The contribution is a practice-informed conceptual framework. The paper does not present a full empirical evaluation of school pilots. Instead, it uses literature, Built Environment Education repositories and school-based pilot experiences to identify how the approach works and what conditions support its application. Although the paper focuses on Built Environment Education, its implications are broader. The case helps clarify a general challenge for educational innovation: how schools can collaborate with external educational actors to make real-world learning more applicable, situated and socially meaningful. In this sense, Built Environment Education is both a specific field of practice and a useful lens for thinking about collaboration between formal and non-formal education more widely.

2. Framework

The framework is shaped by the interaction of three sources. First, Project-Based Learning literature provides the pedagogical structure. It frames learning as a process of inquiry around meaningful questions, sustained investigation, collaboration, reflection and the production of outputs that can be shared with others (Bell, 2010; Krajcik & Shin, 2014; Thomas, 2000). This is relevant for Built Environment Education because questions about school spaces, neighbourhoods, accessibility, environmental quality or public life cannot be addressed through one subject alone. They require students to connect observation, interpretation, dialogue and proposal-making.

Second, Built Environment Education provides both spatial and civic content. International principles and practice repositories show a wide range of methods, including mapping, model-making, design workshops, community walks, exhibitions and participatory school projects (International Union of Architects, 2019; UIA Architecture and Children Work Programme, n.d.). In this paper, these sources help define Built Environment Education as a field concerned with spatial literacy, participation and the capacity to understand and improve everyday environments.

Third, the framework draws on school-based pilot experiences, especially from the *My School Can Be Cool* programme developed by De-a Arhitectura. The programme focuses on the school environment as an object of inquiry and design. It brings together students, teachers, architects and local partners in processes through which students observe, analyse and imagine improvements to the spaces they use every day. The programme also provides an online guide and examples that support different stages of the process, from observation and diagnosis to proposal-making and communication (De-a Arhitectura, n.d.).

These experiences are not treated here as a formal empirical sample. They are used as grounding material for identifying recurrent pedagogical steps and conditions of application. Their relevance lies in a repeated learning sequence: students observe and document their school environment; identify needs, qualities and problems; discuss different users' perspectives; develop spatial proposals; and communicate these proposals through drawings, models, exhibitions or public presentations. The Reșița experience, for example, shows how such processes can connect school-based inquiry with local public administration and wider participatory design aims (Order of Architects of Romania, 2023).

The pilots also help clarify the collaborative conditions discussed in the paper. Teachers are essential for connecting the process to students, curriculum and school culture, while built-environment educators contribute with their specific spatial knowledge and visual tools. These experiences also show why co-curricular and extracurricular formats matter: they create enough flexibility for students to work with real spaces, real users and open-ended questions without forcing the process too quickly into ordinary subject routines.

The framework therefore connects three dimensions: a pedagogical approach, a spatial field of learning and a collaborative condition of application. Its purpose is to clarify how Built Environment Education can operate as a situated form of Project-Based Learning, and how formal–non-formal educator collaboration can support its application in everyday school life.

3. Built Environment Education and the spatial dimension of Project-Based Learning

Built Environment Education and Project-Based Learning are strongly aligned, but they are not identical. Project-Based Learning offers a pedagogical structure for organising inquiry, collaboration and production around meaningful problems. Built Environment Education gives this structure a specific spatial, social and civic field of application: the everyday environments in which students live and learn. The connection between the two is therefore not only methodological. It is also educationally and socially significant. The built environment is a rich object of learning because it is both ordinary and complex. Students encounter classrooms, corridors, schoolyards, streets, parks, housing areas and public spaces every day. These places appear familiar, but they also express decisions about access, comfort, safety, identity, environmental quality and social interaction. Through Built Environment Education, students can begin to understand that space is not neutral. It is designed, regulated, used, maintained, contested and transformed.

Built Environment Education deepens Project-Based Learning in three main ways. First, it gives inquiry a concrete and shared object: a school entrance, an unused courtyard, an unsafe crossing or an uncomfortable classroom can become a starting point for observation and questioning. Second, it strengthens interdisciplinary learning, because questions about the built environment connect environmental science, design, mathematics, citizenship education, geography, arts, technology and language. Third, it adds a participatory and civic dimension. When students analyse their learning environment and formulate proposals, they practice how to read a common space, discuss needs with others, consider different users and communicate ideas for change. This is closely linked to student agency. Agency is not treated here as individual self-expression alone, but as the capacity to understand conditions, imagine alternatives and act with others in relation to a shared environment (Emirbayer & Mische, 1998; OECD, 2019). The school environment is especially relevant in this respect. It is often treated as a fixed background to education rather than as part of education itself, although classrooms, corridors, entrances, outdoor areas and informal gathering spaces influence learning, wellbeing and belonging.

The relationship between Project-Based Learning and Built Environment Education can be clarified by looking at how general features of Project-Based Learning become more specific when the object of inquiry is the built environment. Table 1 summarizes this specification.

Table 1. Built Environment Education as a specification of Project-Based Learning in school settings.

Project-Based Learning dimension	Built Environment Education specification	Learning value
Driving question	A real spatial issue in the school or its surroundings	Students see the relevance of inquiry because the problem affects their daily life
Investigation	Observation, mapping, user interviews, measurements, photo documentation	Knowledge is produced through contact with place, users and evidence
Collaboration	Teachers work with architects, urbanists, designers, cultural mediators or NGOs	External expertise expands what can be done without replacing the teacher
Public product	Spatial proposal, prototype, exhibition, action plan or debate with decision-makers	Learning becomes communicable and potentially useful for the school community
Reflection	Discussion of spatial choices, user needs, constraints and alternatives	Students connect personal experience with collective responsibility and civic judgement

Table 1 shows that Built Environment Education does more than offer examples for Project-Based Learning. It sharpens project work by introducing a concrete knowledge domain and a public-value horizon. The school is not treated only as a container for learning, but as a living environment that can be investigated, interpreted and improved. Small outputs such as maps, models, exhibitions, design scenarios or temporary interventions can already create a public learning process. The most important educational result is not a redesigned space, but a changed relationship between students and their environment.

4. Collaboration between formal and non-formal educators

Formal educators bring knowledge of students, curriculum requirements, school culture and learning progression. Their role is central in connecting a project to curricular aims, ensuring continuity and supporting reflection. Non-formal built-environment educators bring complementary resources.

They may be architects, urbanists, designers, cultural educators, community facilitators or educators working through architecture and children programmes. Their contribution lies in spatial literacy, design methods, visual and material tools, facilitation of collective inquiry and familiarity with real-world questions of place-making, accessibility, sustainability and public space.

The collaboration works best when both types of educators have distinct but connected roles. The teacher frames the learning process in relation to students and school objectives. The non-formal educator supports methods that may be less familiar in school practice: mapping, site observation, model-making, user interviews, spatial diagnosis, scenario-building, prototyping or public presentation. Together, they can create a process that is pedagogically meaningful and grounded in real spatial questions.

School-based pilot experiences suggest a recurring sequence. Students first observe and document their school environment. They identify spatial qualities, problems or tensions, such as unused areas, uncomfortable classrooms, poor outdoor spaces, unclear entrances, lack of shade, difficult circulation or limited places for informal interaction. They then discuss these observations, formulate questions, develop proposals and communicate them through drawings, maps, models, exhibitions or presentations. In some cases, the process may lead to small interventions. In others, the main result is a shared diagnosis or a more critical understanding of the school as a common environment.

This type of process benefits from external mediation because students are asked to move across different forms of knowledge: everyday experience, observation, measurement, imagination, dialogue and representation. They also need to consider other users of the same environment, such as younger students, teachers, administrative staff, parents or local communities. Non-formal built-environment educators can support this movement from personal perception to collective interpretation, while teachers connect the process to learning objectives and student reflection.

Collaboration can enter school life through different formats. This matters because the application of Built Environment Education depends not only on pedagogical value, but also on time, roles, institutional support and continuity. Non-formal education is relevant here because it is intentional and organised, while often remaining more flexible than formal curriculum delivery (Council of Europe, 2026). In Built Environment Education, this flexibility allows external educators to support teachers with spatial methods, design tools and links to wider communities of practice. Table 2 shows that co-curricular and extracurricular formats should not be understood as secondary or marginal. They often provide the first realistic route through which Built Environment Education can enter schools. Co-curricular formats help teachers connect spatial inquiry to existing subjects; extracurricular formats create more flexible time for experimentation; whole-school and network-supported routes can give projects continuity and visibility. Together, these routes show why collaboration is not only a delivery mechanism, but part of the educational framework itself.

Table 2. Collaboration routes for bringing Built Environment Education and Project-Based Learning into school.

Collaboration route	Typical format	Main implementation value
Co-curricular	A project linked to one or more subjects, sometimes during a thematic week	Connects spatial inquiry to existing learning objectives
Extracurricular	Club, competition, optional course, after-school lab or design challenge	Create flexible time for experimentation and mixed facilitation teams
Whole-school	School improvement process, student council initiative or municipal partnership	Links student inquiry to decision-making, resources and institutional memory
Network-supported	Programme run with an NGO, cultural institution, professional body or university	Provides methods, visibility, documentation and continuity beyond a single teacher
Repository-supported	Use of documented examples, awards, guides or previous school projects	Helps educators adapt tested formats rather than starting from zero

This does not mean that every school needs complex partnerships or large-scale design projects. A useful collaboration may involve a few sessions, a focused school-space investigation, a temporary installation or a public discussion of student proposals. What matters is the quality of the learning sequence and the clarity of roles. When collaboration is well framed, external educators help teachers do something that is educationally valuable but difficult to do alone: connect curriculum, place, inquiry and action.

5. Discussion and conclusions

The framework proposed in this paper suggests that Built Environment Education and Project-Based Learning are closely aligned, but their relationship should not be understood only as a methodological fit. Built Environment Education gives Project-Based Learning a specific spatial and civic focus. It invites students to investigate the environments that shape their everyday lives and to understand

these environments as social, ecological and cultural constructions. In this sense, the built environment becomes both a subject of inquiry and a context for action.

The first research question concerned what Built Environment Education adds to Project-Based Learning. The answer developed here is that it connects inquiry, collaboration and visible outputs to real places that students know and use. Questions of sustainability, inclusion, safety, belonging and participation are embedded in classrooms, schoolyards, streets, neighbourhoods and public spaces, not only in abstract themes.

The second research question concerned the collaborative conditions that support application. The paper argues that collaboration between formal educators and non-formal built-environment educators is an important condition: teachers bring knowledge of students and curriculum, while external educators bring spatial expertise, design methods, facilitation tools and links to professional or community-based knowledge. The practical implication is that co-curricular and extracurricular formats should not be treated as marginal spaces. In the case of Built Environment Education, they often provide the first realistic gateway through which place-based, project-based and collaborative learning can enter school life. They offer flexible time, room for experimentation and opportunities for external collaboration. Over time, these formats can influence regular teaching by creating tested methods, shared language and confidence among teachers.

The implications also extend beyond Built Environment Education. Many fields that aim to connect school learning with real-world challenges face similar constraints: sustainability education, civic education, heritage education, arts education, STEAM and community-based learning all require forms of knowledge and facilitation that may not be fully available within schools. The case of Built Environment Education therefore points to a broader lesson: formal education may need structured collaboration with non-formal educators in order to make real-world learning more applicable, sustained and socially meaningful.

The paper has a limited scope. It does not present a full empirical evaluation of school pilots, nor does it measure student outcomes. Further research could examine how different collaboration models work across school levels, how teachers and non-formal educators negotiate roles, and what kinds of support are needed for such practices to become more sustainable. The main conclusion is that Built Environment Education should not be seen as a specialised enrichment activity for students already interested in architecture or design. When connected with Project-Based Learning and supported by formal–non-formal collaboration, it can help students read, question and participate in the transformation of the places they inhabit.

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