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Editorial

Learning Environment Design and Use

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Reflecting a global trend of increased school construction, research into the built environment of education has multiplied over the last two decades. It seems unlikely that there are many counties where the assessment made in 2002 by education researcher, Helen Clark [1], in relation to the UK, would still hold: 'The neglect of school buildings in the past quarter of a century corresponds with a lack of educational research into their use' (Clark, 2002: 3). Some would argue, however, that the limited scope of much of the research in this area, which has been noted on various occasions through the last 20 years (e.g., Blackmore et al., 2011 [2]), remains an issue [3]. We will therefore consider what the contents, disciplinary backgrounds, and methodologies of the set of papers that comprise this Special Issue suggest about the state of this research area.

Our over-arching aim was to capture the diversity of research related to learning environments, and depending on exactly how diversity is judged, we have done that to a greater or lesser extent. It is certainly international and interdisciplinary. The authors, who are architects, educationalists, but also acknowledged learning environment researchers, are based in a range of countries across most continents, investigating learning spaces and design processes in China [4,5], Australia [6], Europe [7–9], South America [8], and the Nordic countries [10–12]. Interestingly, the contribution from Australia [2], where so much school building has occurred recently, presents a transdisciplinary review of the international literature to develop an understanding of affordance theory related to school design. This is then used to explain the challenges innovative learning environments (ILEs) can present for users and to suggest ways to enable better communication between designers and users. The authors use of theory to address, but reach beyond, specific aspects of the southern hemisphere's ILE landscape answers Benade's [3] contention that this research area is still dominated, to its detriment, by studies centered on 'descriptively documenting the performance of building fabric or attitudes of teachers' (Benade, 2021: 519). That said, we were always keen that our Special Issue would consider practice as well as theory, and this orientation is evident through the papers centered on pedagogical practices [8,11], student practices [5,7,9], and participatory design processes [8,10,12].

Looking across the educational contexts of the contributions, a range of educational sectors are evident. Educational spaces and resources in schools and universities feature catering for younger children [8,11], older children [7,10,12], and adults [4,5,9]. The papers include some that focus particularly on ILEs [6,10–12], but others that investigate other spaces for learning and teaching [4,5,7–9], which seems important when it is considered that ILEs, although much discussed, are still out-numbered by more traditional settings, even in countries where they are being embraced [13].

Turning now to the stage of the design and use timeline that the papers address and bearing in mind the criticism of Blackmore and colleagues back in 2011 [2] of the neglect of stages beyond initial planning and designing, it is good, and encouraging, to see a range. Although some papers do indeed focus on the design phase [6,8,10,12], others investigate spaces in use [4,5], particularly presenting approaches to post-occupancy evaluations, POE [9,11], and users' reflections on buildings in use [7].

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Moving on to the methodologies presented in the different papers, a case study approach is the most used [7,9,11,12]. These papers merge perspectives from various theories, and overlap with empirical studies using a range of designs and methods to focus on the learner perspective represented in different age groups, genders, and cultural contexts and its relationship with the built environment [4,5,7,9,10,12]. Most of the studies evidence a focus on qualitative data [7,11,12], or establishing a qualitative understanding of design issues [6,8,10], but quantitative data are also evident [4,5,9], with several suggesting a broadly mixed methods research approach [5,7,9,10]. Within and beyond these studies, multiple methods dominate across the papers, with methods including observations, interviews, questionnaires, and focus groups, although with a preponderance of qualitative methods of analysis. Taken as a whole, the Special Issue therefore demonstrates the range of research designs, methods, and data that can be used to investigate the use of educational spaces. There is much here for developing researchers but also for premises managers and regional authorities hoping to evaluate their educational buildings and address the neglect, or narrowness, of POE that has been criticized for many years [14].

Alongside this empirical endeavor, however, all the papers appeal to more generalized knowledge, abstract understandings, or theoretical ideas. Although some contributions are more explicitly theory-driven than others, all attempt to reach conclusions beyond their immediate contexts, while still informed by these contexts. Therefore, we feel they answer Benade's concerns about research in this area, although perhaps not entirely as he had in mind [3]. He sees opportunity in, 'Focussing on space and the significance of spatiality as a theoretical project . . . [and so] . . . , elevating the concept above the purely empirical or abstract, locating spatial questions in a wider socio-political context' (Benade, 2021: 524). We are confident that these papers, through their range of methods, perspectives, and settings, do just that, underlining that 'the issues of space are not ordered or orderly and thus do not submit to simple analyses of effects or outcomes' (Benade, 2021: 524).

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References

1. Clark, H. *Building Education: The Role of the Physical Environment in Enhancing Teaching and Research. Issues in Practice*; Institute of Education, University of London: London, UK, 2002; pp. 2–48.
2. Blackmore, J.; Bateman, D.; Cloonan, A.; Dixon, M.; Loughlin, J.; O'Mara, J.; Senior, S. *Innovative Learning Environments Research Study*; Deakin University: Melbourne, Australia, 2011.
3. Benade, L. Theoretical Approaches to Researching Learning Spaces. *New Zealand J. Educ. Stud.* **2021**, *56* (Suppl. 1), 11–26. [CrossRef]
4. Sun, Y.; Luo, X.; Ming, H. Analyzing the Time-Varying Thermal Perception of Students in Classrooms and Its Influencing Factors from a Case Study in Xi'an, China. *Buildings* **2022**, *12*, 75. [CrossRef]
5. Wang, S.; Han, C. The Influence of Learning Styles on Perception and Preference of Learning Spaces in the University Campus. *Buildings* **2021**, *11*, 572. [CrossRef]
6. Young, F.; Cleveland, B. Affordances, Architecture and the Action Possibilities of Learning Environments: A Critical Review of the Literature and Future Directions. *Buildings* **2022**, *12*, 76. [CrossRef]
7. Coelho, C.; Cordeiro, A.; Alcoforado, L.; Moniz, G.C. Survey on Student School Spaces: An Inclusive Design Tool for a Better School. *Buildings* **2022**, *12*, 392. [CrossRef]
8. Woolner, P.; Cardellino, P. Crossing Contexts: Applying a System for Collaborative Investigation of School Space to Inform Design Decisions in Contrasting Settings. *Buildings* **2021**, *11*, 496. [CrossRef]
9. Wu, X.; Kou, Z.; Oldfield, P.; Heath, T.; Borsi, K. Informal Learning Spaces in Higher Education: Student Preferences and Activities. *Buildings* **2021**, *11*, 252. [CrossRef]
10. Mäkelä, T.; Leinonen, T. Design Framework and Principles for Learning Environment Co-Design: Synthesis from Literature and Three Empirical Studies. *Buildings* **2021**, *11*, 581. [CrossRef]
11. Sigurðardóttir, A.K.; Hjartarson, T.; Snorrason, A. Pedagogical Walks through Open and Sheltered Spaces: A Post-Occupancy Evaluation of an Innovative Learning Environment. *Buildings* **2021**, *11*, 503. [CrossRef]

12. Frelin, A.; Grannäs, J. Designing and Building Robust Innovative Learning Environments. *Buildings* **2021**, *11*, 345. [CrossRef]
13. Bradbeer, C.; Mahat, M.; Byers, T.; Cleveland, B.; Kvan, T.; Imms, W. The "state of play" concerning New Zealand's transition to innovative learning environments: Preliminary results from phase one of the ILETC project. *J. Educ. Leadersh. Policy Pract.* **2017**, *32*, 22–38.
14. Cooper, I. Post-occupancy evaluation—Where are you? *Build. Res. Inf.* **2001**, *29*, 158–163. [CrossRef]