Future Classroom Lab Strategic Seminar
Building up active learning within innovative learning environments
15 May 2019

Research on learning spaces and active learning

Are the existing learning spaces optimally designed for active learning? Does the design of the school foster current active and rich teaching and community engagement? How can the school infrastructure be designed to evolve sustainably over the longer term? How to best align technology with the needs of schools? How to combine different sciences/expertise that requires involvement of all users of these spaces - teachers, parents and children – in the decision-making process for infrastructure development? The **Research on learning spaces and active learning** session did look at what we know from research that can help us to address these key questions.

Participatory design for built learning environment

Prof. Karen Konings from Maastricht University (NL) addressed the reasons why to use participatory design, and suggested ways to implement it. Because of differences in perspectives between students, teachers, designers, and architects the space and its use for learning, optimal learning spaces are to be the result of a design process involving all those actors and combining their respective perceptions. Optimal learning spaces also depend on their alignment to the pedagogy to be implemented that should be the starting point for any building and space organisation process. Participatory design is nonetheless challenging. Evidence from research supports the idea that chance of success increases when participatory design is supported by close collaboration and mutual understanding processes, able to experiment and test different design options, and use of facilitators during interactions between participants. The use of visual and building information modelling (BIM) tools also facilitates the process particularly in preventing design failures to become apparent too late. More specifically, interdisciplinary model of participatory building design help identify specifically who are the partners in the design process, the level of participation aimed for each group (students, teachers, parents, etc.) depending the phase of the design process ((planning, implementation, observation, reflection). While the need for an integrative approach makes participatory design essential, an important challenge remains to prevent schools from historical tendency to revert to traditional education throughout time and depending change in teaching staff and/or school leadership.

Main research findings about the relationship between space and learning

Evidence produced by research is useful to identify possible need to adjust some aspects of the approach implemented in the FCL till now and frame the forthcoming FCL research programme.

Overall research findings suggest that 'investments in quality school infrastructure are strongly associated with improved learning outcomes (even after controlling for student's socio-economic background).' (Barrett, 2015). Light, air quality, temperature influence learning progresses, as do color, visual complexity, flexibility of the arrangement and room for ownership. Empirical evidence for investing in learning environments is indeed strong. The six specific learning zones offered by the FCL (interact, exchange, investigate, create, present, develop) align to other similar learning environments usually made of 5 or 6 zones all defined according to quite similar characteristics and designed to support same specific learning processes and behaviors (Scott-Webber, 2004). What counts most according to research findings is the alignment between learning space, teaching practices and the curriculum. This pleads for enough diversity of learning spaces to be available within a school as a way to adjust to different teaching practices and curriculum approaches depending subjects, competences targeted and learning activities.

Interestingly, research also underlines the importance of school leadership in briefing and programming the space (Nordquist, 2015) and creating a culture of sustainable change (Imms, 2015) as a way to mainstream nowadays praised active learning practices like project-based learning, problem solving, inquiry-based learning and peer-to-peer learning (to cite a few).

For what concerns the preparation of the forthcoming FCL research programme, available evidence helps to define its conceptual framework. Whatever the specific research questions to be addressed, analysing the impact of the space on student learning should be envisaged according to specific learning approaches and purposes, and the space considered as supporting change in practices rather than creating it. Teachers competence in implementing specific teaching approaches as such, and in using the space to support such practices should also be part of the analysis, as well as the school leadership attitude and capacity to provide the necessary diversity of learning spaces.

Evidence presented above paves the way to many possible questions to be part of the FCL research programme, to also be articulated around participatory design issues. Just to mention a few of these questions: How to make teachers best using the space? How does the space support teacher collaboration? How does the space work for learners with special needs? How to align space with technology? How to organize the space to implement 'augmented' learning? How to sustain a culture of change at school level aligning curriculum, pedagogy (including assessment) and the space organisation?

Obviously, choices of focuses for the FCL research programme will have to be carefully made in the coming months, taking into account topics of interest for the FCL partners, especially in countries where the FCL experiment has inspired a certain number of schools and teacher training spaces.

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For any questions regarding the seminar please contact fcl@eun.org