

Design patterns for teaching in academic settings in future learning spaces (FLS)*

Liat Eyal* and Einat Gil*

Levinsky College of Education

*Contact details:

Email—liate@levinsky.ac.il; einat.gil@levinsky.ac.il

Tel +972-506887171; +972-506558695

FLS is a new theoretical concept and an emergent reality in the landscape of higher education and schools (Freeman, Becker & Cummins, 2017). It describes the changing educational environments by combining innovative pedagogy and technology. It enables teaching and independent learning while experiencing collaborative, interactive learning and the use of diverse technologies, in which learners can share responsibility for content, technology and space (Hod et al., 2016). Some studies have documented the importance and benefits of teaching and learning in FLS classrooms, such as enhancing learners' interaction with the teacher as facilitator, promoting equitable learning for disadvantaged populations, enhancing learning outcomes, and increasing student satisfaction (Beichner, 2014; Chiu & Cheng, 2017). Baeplar and colleagues (2016) suggest three ways by which space is important to teaching and learning. The first serves as "mediator and moderator of instructor and student behavior" (p. 18). The second emphasizes the way the space is being used as a designed activity by the lecturer (e.g. lecture, inquiry-based activity etc.). The third relates to the physical characteristics of the space such as size, layout, colors that instill potential and meaning for how the space might be used.

Our approach strives from a design pattern theoretical approach and looks at the interplay between the space and activity design. Design Patterns (DPs) are action patterns of practical knowledge (know-how) that are formulated by experts to be repeatedly used in different contexts and shared with novices (Warburton & Mor, 2015). Increasing our knowledge about DPs in the FLS environment and making this knowledge public will assist in scaffolding teaching in both k-12 and higher education. This, in turn, can be leveraged into creating fluency and expertise of lecturers as teaching innovation leaders in current changing times.

The FLSs at the Levinsky College have been operating for a year and a half, where dozens of lecturers have taught and conducted hundreds of activities, and a great deal of knowledge has accumulated and documented in a variety of ways. This paper focuses on an analysis of narratives, serving as the basis for the design patterns. The process of extracting practices (Warburton & Mor, 2015) was carried out: the authors generalized elements, defined the patterns and design principles resulting from them on a theoretical level (Courey, Tappe, Siker & LePage; 2013).

* Both authors have contributed equally to this manuscript

We hereby describe four selected activity design-patterns for teaching and learning in FLS.

Activity Design Pattern	Name	Essence
1	Convergent groups	Splitting the class to several inquiry groups that work simultaneously on a task with large screens; When finished, each group presents its findings from their physical location.
2	: Teaching in an Interactive Orchestrated learning space	Creating learning stations with exploratory tasks while each group works separately and in parallel to the other groups on different aspects of the subject. Each group advances through all the stations, documenting the data into one general repository.
3	Presentation Fair	A class design based on visual and parallel representations of learning outcomes and peer assessment in two rounds.
4	Think-Join-Share	Offering the time and an opportunity to establish a personal position, finding colleagues whose position is similar and formulating the joint position while exposure to colleagues whose position is different

We offered four design patterns as a representation of best practices. The design patterns that emerge from a variety of rich teaching activities reflect some of the advantages of learning in future learning space (FLS) by providing flexible use of space, technology and pedagogy. In this hybrid learning environment (Ellis & Goodyear, 2016), the DPs describe and support dynamic shifts between stages of activity, characterized by fluid transitions between formal and informal social structures such as group-led and teacher-led plenary in different modes of activities such as inquiry and discussion. Alongside it, the DPs contain the combination of physical encounters and digital tools mediating individuals' interactions with colleagues (Cook et al., 2015), such as in presentations, peer assessment and group rotation etc.

These DPs enable putting into practice and nurturing educational and pedagogical values such as: transparency, equal participation in discourse, inclusion, aesthetics, choice, encouraging learners' independence and extending respect to each learner. Using these DPs, we addressed a variety of challenges in the context of implementing innovative pedagogy: equal participation, documentation of learning, focusing attention and concentration in learning, constructing collaborative knowledge, coping with peer pressure, looking at a variety of perspectives and dynamism in class management.

*The full paper will be published on BJET.

References

- Baeplar P., Walker J. D., Brooks D. C., Saichaie K. & Petersen C. I. (2016). *A guide to teaching in the active learning classroom: History, research and practice*. Sterling, VA: Stylus Publishing, LLC
- Beichner, R. J. (2014). History and evolution of active learning spaces. *New Directions for Teaching and Learning*, 2014(137), 9-16.
- Chiu, P. H. P., & Cheng, S. H. (2017). Effects of active learning classrooms on student learning: a two-year empirical investigation on student perceptions and academic performance. *Higher Education Research & Development*, 36(2), 269-279.
- Cook, J., Lander, R., & Flaxton, T. (2015, September). The zone of possibility in citizen led 'Hybrid Cities'. Paper presented at *Workshop on Smart Learning Ecosystems in Smart Regions and Cities*, co-located at EC-TEL, Toledo, Spain, September 2015.
- Ellis, R. A., & Goodyear, P. (2016). Models of learning space: integrating research on space, place and learning in higher education. *Review of Education*, 4(2), 149-191.
- Freeman, A., Becker, S. A., & Cummins, M. (2017). *NMC/CoSN horizon report: 2017*. The New Media Consortium.
- Hod, Y. (2017). Future Learning Spaces in Schools: Concepts and Designs from the Learning Sciences. *Journal of Formative Design in Learning*, 1(2), 99-109.
- Warburton, S., & Mor, Y. (2015). Double loop design: Configuring narratives, patterns and scenarios in the design of technology enhanced learning. In Y. Mor, M. Maina, & B. Craft (Eds.), *The art and science of learning design* (pp. 93–104). Rotterdam: Sense.