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# Emerging design solutions for hybridised learning spaces: addressing social practice, privacy and participation

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The term 'hybrid learning space' (HLS) is loosely used to describe a fusion of learning opportunities and teaching approaches that span physical and virtual spaces. This paper outlines *ongoing* work to define the contemporary 'hybridised space' and build a pattern language that offers reusable design solutions to the challenges of delivering learning and teaching in these new and emerging settings. This paper explores architectural motifs, social practice, privacy and participation to draw out successful design principles for linking HLS to effective pedagogy.

Keywords: Hybrid Learning Spaces, Social Practice, Privacy, Participation, Architecture

## Defining the hybrid learning space

The conceptualisation of the Hybridised Learning Space (HLS) has continued to evolve to a point where it has reached widespread acceptance in the educational sector as a valid descriptive terminology for a particular type of educational manifestation and a key component of the future campus design. HLS have been deployed in multiple forms, with varying success and often with contested understandings (Gil et al., 2022):

> "As we have come to accept the duality of physical and virtual learning spaces as a permanent feature of our educational landscape, we begin to question its validity. Is this really a dichotomy, or is it a continuum?" (p.9)

For Kohls (2017) the HLS incorporates elements that span the physical, digital, information, conceptual, navigational, and social space. In his design patterns paper he describes how the dichotomy of digital and non-digital artefacts can be resolved in a hybrid learning space by seamlessly bridging different types of artefacts, making digital data touchable, enhancing physical objects with digital information and, digitising physical objects. Yet, hybridised spaces are of course not new. The notion of bringing real and virtual participants together has materialised in a range of forms including for example hybrid meeting and conferencing and, has been theorised through work around telepresence, participation and technological efficacy (Lombard et al., 2015). There is also an important strand of applied research that has been developed around active learning spaces (Loughlin et al., 2015) that provides meaningful and valuable insights into the technologically enhanced classroom that moves away from classical teacher to student transmission model to relations that are decentred and group based. In this paper the focus is on hybridised spaces within a learning context and therefore the HLS cannot be separated from discussions of teaching and its configuration and enactment within these evolving settings (Köppe, et al., 2017):

> "Hybrid pedagogy means the interplay and mix-up of pedagogical concepts that are traditionally separated. It aims at dissolving the dichotomies within education such as physical -digital, academic-nonacademic, online- offline, formal-informal, learning-teaching and individual-collective." (p.98)

Many previous studies have reported the crossovers between space design and pedagogy (Ellis & Goodyear, 2016) but this paper privileges the importance of the hybridised space for learning and teaching and the role that identity, privacy and participation play in grounding effective teaching and how blending social practice and architectural motifs provides an important design lens. Of particular interest here is how the crossover between digital and physical space creates new affordances, enhances the experiential value of both domains and, becomes a *site* where digital placemaking and novel pedagogies may emerge (Cohen et al., 2020).

## Approach and methodology: building reusable design solutions

The value of using patterns to consolidate approaches to design solutions was popularised in the mid-1970s by Christopher Alexander. He developed the first pattern language for architectural design and defined how a design pattern abstracts and generalises the essence of a successful design solution within a three-part rule which shows the relation between a certain context, a problem and a solution (Alexander, 1977). In the mid-1990s the software developer community started to adopt the Alexander style to portray the themes that reappear in different computing and software development domains (Gamma et al., 1995). The design pattern approach is now used in various disciplines such as interaction design (Borchers, 2001) and socio-technical systems (Schümmer, 2007). Existing educational patterns cover areas such as learning with technology (Warburton & Mor, 2015), or general pedagogical practices (Mor et al., 2014). Our approach here, drawing on methodologies identified in the literature, has been threefold:

- to look for existing patterns and principles of good practice in learning space design and extract their essence as design patterns using the 'Rule of Three' (Alexander, 1977).
- mine the literature for extant patterns that can be adapted and shaped to inform design decisions in this emerging sphere.
- to document emergent patterns in a proto-pattern form for later iteration and refactoring.

### 2.1 Limitations

The design patterns presented in this paper remain in development and are intended to be used in designing solutions in a higher education learning and teaching context without any specific disciplinary bias. However, there are many elements within the patterns that offer transferable insights to other educational settings and indeed beyond, for example events and conferences that run in a hybridised environment

## Theoretical motifs

A number of theoretical motifs (described below) run through these patterns and underpin the forces (*tensions*) that exist within this particular design space. Hybridity can be seen as presenting a range of differing challenges that include: technical (cameras, ambient noise, microphones, Internet bandwidth); social practice (relationships, presence, activity versus passivity, convergent versus divergent modes of thinking, public - private boundaries); socio-technical (systems design); and finally, pedagogical.

### Motif one: the social nature of space (architecture)

Space is not neutral. It shapes, interacts and moulds the behaviours and sensibilities of actors within it and provides different affordances according to the many configurations of light, distance, colour, line of sight, and so on. As Čiupailaitė (2016) describes:

> "The properties of space: openness, linkage, control, linearity and others are related to cultural provisions regarding social activity meanings, human behaviour models and preferences in respect of spatial configurations e.g., in the libraries one kind of work is performed while in the cafes are practiced in other way. Work can be performed in the cafe and in the library, still human expectations in respect of noise and quiet or people closeness will be different."

If architects are able to play with the both the emotive and social affordances of the spaces they design then so too can educators. The ability to create expectations, for example the square which presupposes the existence of a cafe where one may sit to watch people go by, is not dissimilar to the lecture theatre with its tiered ranks, podium and the behavioural expectations of a passive audience and active speaker.

### Motif two: social practice (relations)

Social practice provides a lens to both interpret and organise activity within hybridised spaces. Through intentional identification of the elements of social practice it allows for design decisions to be made at the interfaces of structure, cognitive processes, embodiment and performance (see *Figure 1*). Here structure refers to the social systems in which individuals operate, materiality denotes the physical environment, and embodiment is our interaction with it through our body, and our mental image of that. Performances relate to the ways in which we communicate our identity, intentions and relationships through action. Our cognitive mental processes shape our interpretation of the social, physical and digital environment and determine our actions or performance.
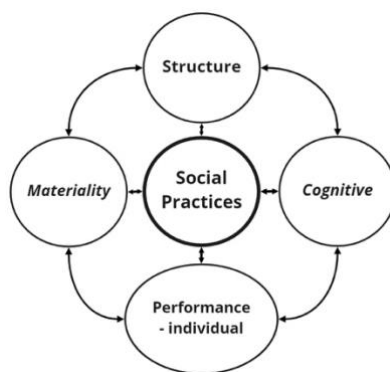
**Figure 1: Elements of social practice**

Practice theories come from different perspectives and bring diverse emphasis (Grootenboer, et al., 2017). Yet, all agree on the situatedness of practices and their synergy with the context – physical, social, cultural, organisational and technological – in which they are embedded. We define a practice as a pattern of action, aimed at achieving a specific goal in a given context. A participant in a practice identifies, or "reads" the contextual cues to determine the appropriate practice, and then interprets signals from the environment or from other participants to proceed from one action to another, until an end state is identified – either the goals have been attained, or they are deemed unattainable. All human activity is organised into systems of practices. Arguably, this is what we call "culture". Here hybridity takes on a surprising twist: we are adept at reading the context we are in and identifying the appropriate practices and our roles within them. In hybrid spaces, we receive an inherently mixed signal – by definition the situation interleaves elements of disparate contexts. We are chameleons on a chequered tablecloth. This creates tensions and dissonances, when our assumptions fail and our actions fall out of sync.

As Benyon (2014) writes and Leijon (2016) observes, we read space as a social text – inferring function and conventions from it, determining which practices are admissible and expected in it. When we walk into a tiered auditorium, we assume our role as student or teacher, and take our place accordingly. As student, we will remain silent until the teacher asks for questions. When we enter a library, we will find a table and sit quietly, engaging in independent study. Hybrid spaces create ambiguous social text for the actors within them.

## Design Patterns

Within the space constraints of a concise paper the authors have chosen to fully render one design pattern and reference the remainder patterns in a simplified synopsis format (Table 1). The full patterns are available on the supporting website ([https://hls-d3.iucc.ac.il/](https://hls-d3.iucc.ac.il/)) and open to active input and engagement. The patterns follow an adapted Alexandrian form and a descriptor of each section has been added to direct the reader.

### Pattern: Readable space for hybridised learning

**Domain:** A meta pattern that identifies the forces and constraints that exists in any hybridised learning environment and the importance of creating readable 'space and place' as a social text that can affect and frame social practice.

**Context** *(where this design pattern is effective):* You have identified a need for creating a hybrid learning community - your learners are distributed in both their spatial and temporal existence. They may be in different phases in life (e.g., some are high school students, some higher education, some at work seeking professional development). You are also aware that your learners are likely to be heterogeneous in terms of their technical and virtually mediated experience which will impact how comfortably they can be brought to this novel setting.

**Problem** *(statement of the challenge that this particular pattern addresses)***:** You want to build a hybrid learning space that supports high quality learning, confident teaching and, a feeling of openness to engagement while providing a feeling of safety for those participating. You want the space to feel simple, inviting, and safe. However, hybrid spaces act as ambiguous social texts where we experience multiple scenes at once, and are not sure which set of norms, conventions, and practices to assume e.g., when our teacher's children enter the frame in their pajamas – should we respond as we would if we were in their home or as we would in class?

**Forces** *(what are the elements that are in tension within the problem space):*

- Public-private boundaries are understood differentially in virtual versus physical spaces.
- Identity is developed, managed and understood differently within a hybrid space.
- Our sense of identity and place is disrupted if others are let into our [private] spaces.
- The places from which we observe and participate are not neutral. Framing (from cinematography) can both switch and change perceptions.
- Movement can disturb a stable dynamic preventing some learners from participating.
- Sound (audio) changes in different settings and can privilege certain types of behaviours and reactions.
- Light and lighting affects mood.
- [Non] corporeality is a factor that subtly alters the mechanisms by which learners engage.
- Power can be distributed in new and unexpected ways e.g., the ability to mute a virtual participant.
- Phenomenological aspects can become heightened in significance. Prior experience dominates many dimensions and underpin assumptions we may make when performing in both virtual and physical spaces.
- Spatial architecture can affect modes of thinking and behaviours: from divergent and convergent modes to active and passive behaviours.

**Solution** *(measures that can be taken to resolve the forces and bring harmony to the problem):*

Therefore, set the design parameters by carefully considering how the connected places are presented to the learners as a program of sensual experience. This means, determining not only the socio-technical elements that afford teaching but also the impact of the structures themself. What are the elements of its materiality being presented - depressing, inspiring, tactile-ness (odour and colour)? Each design pattern listed in (Table 1) addresses the forces within this meta-design pattern and can be orchestrated to build a successful design solution.

**Case Studies** *(examples of successful practice and related patterns):*

- Mor-Avi A. and Scott-Webber L. (2022) Creativity Flourishes Using Hybrid Space Patterns. In: *Hybrid Learning Spaces. Understanding Teaching-Learning Practice*. Springer, Cham.
- Kohls, C. (2019). Hybrid Learning Spaces for Design Thinking. *Open Education Studies,* 1:228-244.
- Future Learning Spaces: Flex Space at https://flexspace.org/ and University of Utrecht learning spaces at https://www.uu.nl/en/education/future-learning-spaces

## Overview of all HLS design patterns

**Table 1: Overview of the current design patterns with title, synopsis and related theoretical motif/s and the suggested values that these represent (*refer Conclusion*). Full patterns at https://hls-d3.iucc.ac.il/**

| Pattern title | Synopsis | Motif/s and values |
|---|---|---|
| **1. Readable space for hybridised learning** | Set the design parameters based on the social affordances of space and place for learning and teaching. | Social practice; space as text; equity |
| **2. Placemaking for identity** | Identity and public-private boundaries need to be defined and managed. Designing a 'gradient of intimacy' allows for differentiated areas of pubic versus private to be demarcated within the learning space. | Public-private boundary and identity; space as text |
| **3. Safe spaces** | Design spaces for differing levels of participation with sensitivity to safety and equity of participation. | Structural; space as text; protection |
| **4. Setting the frame** | Use design considerations from film making to solve the *on-screen* framing of learner participation in a hybrid setting. | Embodiment and presence; social practice; empowerment |

| 5. Capability and confidence | Building capability in 'technology, pedagogy, content knowledge' (Mischra & Koeler, 2006) underpins confident and effective teaching and learning. | Performance and cognition; social practice |
|---|---|---|
| 6. Learning Pods | Design an *attendance* format that acknowledges that learners want to participate in often self-determined configurations away from the standard lecture theatre or classroom delivery. | Social practice; connectedness |
| 7. Team teaching | Blend face-2-face and online settings using a methodology that supports decentred and shared teaching approach to best engage leaners within and across the shared classroom space. | Social practice; equity; empowerment |

## Conclusions and next steps

The paper here represents a work in progress with an offering of one meta and six associated design patterns that can be linked together to provide a usable foundation for building a hybrid learning space/classroom. The complicated dynamics of extended social spaces that are used for learning can promote certain types of challenging behaviours: shyness, anxiety, removed inhibitions. Designing for equitable access and participation from active to passive is not straightforward. Certain settings will privilege certain types of presence where telematic presence versus physical presence need to be designed for if they are to be successfully merged. The use of different theoretical motifs and linking to extant case studies provides interesting design configurations that move beyond the more simplistic technological solutions of bringing virtual participants into a physical setting to create a hybridised classroom experience. These patterns form a deeper language that draws together technical, social and architectural solutions that speak to hybridised settings within learning spaces critical to the design of the future campus. As part of this paper we have also surfaced the following values:

- equity (maximising access);
- connectedness (connecting learning to learners' own context);
- protection (safeguarding learners' privacy and wellbeing);
- empowerment (of learners and teachers).

And from these values we have been able to derive principles that address **flexibility, choice, access, clarity and safety which are embedded within the design patterns listed above.**

In summary, these design patterns (and values) are in development and currently being extended with invited commentary from a wide expert-practitioner audience. The aim is to expose these patterns more widely, develop further case studies and provide a high-quality pattern language to the community that will help novice designers of hybrid spaces find successful solutions to the particular challenges they are facing.

## References

Alexander, C., Ishikawa, S., Silverstein, M., Jacobson, M., Fiksdhl-King, I. & Angel, S. (1977). *A Pattern Language: Towns, Building, Constructions*. Oxford University Press.

Benyon, D. (2014). Spaces of interaction, places for experience. *Synthesis Lectures on Human-Centered Information, 7*(2), S. 1129. https://doi.org/10.2200/S00595ED1V01Y201409HCI022

Carmona, M. (2014). The Place-shaping Continuum: A Theory of Urban Design Process. *Journal of Urban Design*, *19*(1), 2-36. http://dx.doi.org/10.1080/13574809.2013.854695

Cohen, A., Nørgård, R. T. & Mor, Y. (2020). Hybrid learning spaces - Design, data, didactics. *British Journal Educational Technology, 51*(4), 1039-1044. http://dx.doi.org/10.1111/bjet.12964

Čiupailaitė, D. (2016). Architecture as a Social Space, or a Sociologist reflects on Architecture. Retrieved May 12, 2022 from http://archmuziejus.lt/en/category/publications/page/3/

Ellis, R. & Goodyear, P. (2016). Models of learning space: integrating research on space, place and learning in higher education. *Review of Education, 4*(10), 1002/rev3.3056.

Gamma, E., Helm, R., Johnson R., & Vissides J. (1995). *Design Patterns: Elements of Reusable Object-Oriented Software*. Addison-Wesley.

Gil, E., Mor, Y., Dimitriadis, Y., & Köppe, C. (Eds.). (2022). *Hybrid learning spaces*. Springer International.

Grootenboer, P., Edwards-Groves, C. & Choy, S. (2017). Practice theory and education: Diversity and contestation. In P. Grootenboer, C. Edwards-Groves & S. Choy (Eds.) *Practice Theory Perspectives on Pedagogy and Education* (pp. 1-21). Springer.

Kohls, C. (2017). Hybrid Learning Spaces. *Proceedings of the VikingPLoP 2017 Conference on Pattern Languages of Program March 2017* (pp. 1-12). https://doi.org/10.1145/3158491.3158505

Köppe, C., Nørgård, R.T. & Pedersen, A. Y. (2017). Towards a Pattern Language for Hybrid Education. *Proceedings of VikingPLoP 2017* (pp. 1-17). https://doi.org/10.1145/3158491.3158504

Leijon, M. (2016). Space as designs for and in learning: investigating the interplay between space, interaction and learning sequences in higher education. *Visual Communication*, *15*(1), 93-124. http://dx.doi.org/10.1177/1470357215608553

Lombard, M., Biocca, F., Freeman, J., IJsselsteijn, W. & Schaevitz, R. J. (Eds.). (2015). *Immersed in Media: Telepresence Theory, Measurement & Technology*. Springer.

Loughlin, C., Warburton, S., Crane, S. & Sammels, W. (2015) Towards Active Learning Spaces and the Flipped Classroom Model. In: *14th European Conference on e-Learning ECEL 2015* (pp. 322–328).

Mishra, P. & Koehler, M. (2006). Technological pedagogical content knowledge: a framework for integrating technology in teacher knowledge. *Teachers College Record*, *108*(6), 1017-1054. http://dx.doi.org/10.1177/016146810610800610

Mor, Y., Mellar, H., Warburton, S. & Winters, N. (2014). *Practical Design Patterns for Teaching and Learning with Technology*. Sense.

Schümmer, T. & Lukosch, S. (2007). *Patterns for computer-mediated interaction*. John Wiley & Sons Ltd.

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. 933-104). Sense.