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Transforming Spaces: Fostering Student-Centered Learning Through the Intentional Design of Formal and Informal Learning Spaces

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Introduction

Transforming the academic experience and success of students by building Active Learning Classrooms (ALCs) is increasing, but ALCs are still fewer than traditional classroom spaces. These new learning spaces create an inherent tension between increasing student enrollments and active learning environments. Accommodating increased class sizes does not have to exclude fostering an active learning space. We have an opportunity every time a classroom is renovated or a new building is built to intentionally acknowledge and engage this tension to positively influence student learning and success.

As we renovate and construct new learning spaces on our campuses, it is not only important to understand how the "built pedagogy" (Monahan 2000, 2002) and "architecture as pedagogy" (Orr 1993, 1997) of our spaces can help or hinder more active learning pedagogies, but also how do support effective teaching in these spaces (Levesque-Bristol, 2019). While many institutions are prioritizing active learning as old classrooms get renovated, few are doing so at the broad campus-wide scope necessary to affect larger-scale culture change (Park & Choi, 2014).

Two such institutions that are developing and supporting large-scale active learning spaces are the Technological University Dublin (TU Dublin) and Purdue University (Indiana, USA). TU Dublin and Purdue are conducting collaborative research focusing on how each institution's new, large-scale construction of formal and informal learning spaces is impacting teaching and learning.

Method

In fall 2017, Purdue University opened the Wilmeth Active Learning Center (WALC) in the heart of campus with 27 active learning classrooms across 8 different room configurations (https://www.purdue.edu/activelearning/). The WALC has set Purdue University as a leader among peer institutions in design, development, and use of both formal and informal learning spaces for student success. Purdue has conducted varying institutional research on their ALCs impact on student learning (Beaudoin et al., 2016), instructor perceptions of teaching in ALCs (Beaudoin et al., 2016), instructor self-efficacy (McDavid et al., 2018), and support of teaching in ALCs (Zywicki, 2016).

Along with ALC research, Purdue is committed to student success with the dedication of resources to enhance learning experiences and transform education at Purdue University through the

IMPACT program. The IMPACT program, "Instruction Matters: Purdue Academic Course Transformation" (impact.purdue.edu), is a semester long, faculty learning community focused on course redesign, that has shown to positively influence instructors' use of active learning pedagogies and spaces (FitzSimmons et al. 2019, Levesque-Bristol et al. 2019, McMurtrie 2018).

In fall 2020, TU Dublin will complete construction and transition to a more centralized main campus at Grangegorman (http://www.dit.ie/grangegorman/). TU Dublin is Ireland's first Technological University, with the Grangegorman campus representing a dynamic hub of formal, informal, and virtual learning spaces fostering a life-long learning process with students. A new project, Enabling Pedagogic Opportunities in the Design of Learning Spaces (EPOL), is to support the effective design and use of new learning spaces in Grangegorman.

EPOL builds upon current institutional practice and international studies, exploring the relationship between the design and configuration of learning spaces, active learning strategies, teaching practices and the quality of the overall learning experience. Selected room exemplars will support the process of identifying effective designs and configuration for new spaces. The project also aims to provide tailored professional development to support student centred-approaches in new formal and informal learning spaces.

Findings

Active learning classrooms (ALCs) have followed the implementation of more active learning pedagogies, which has become a strategic goal in many higher education institutions (Park & Choi, 2014). These active learning pedagogies and active learning classrooms along with the integration of more mobile technologies has created what Monahan refers to as "permeable learning" (Monahan 2000, 2002). More robust, mobile, and feature rich Virtual Learning Environments (VLEs) or Learning Management Systems (LMS) are contributing to the changing learning spaces. This has been the focus of recent research by faculty involved in a professional development programme at TU Dublin (Carolan, Curran & McCormack, 2019) who have explored the combined opportunities offered by new spaces in the Grangegorman campus and the introduction of a new LMS (Brightspace by D2L) to the TU Dublin City Campus. An example of how practice might be influenced is their production of an infographic to support colleagues with planning teaching and learning activities to exploit the potential of both physical and virtual environments.

Research has documented a relationship between the kinds of opportunities open to educators depending on the learning spaces in which they are teaching and their students are learning. Evidence points to a contributory rather than a causal relationship between innovations in learning space design and enhancements of students' learning (Alterator & Deed, 2013). As university educators develop and enhance their teaching practice overall, we can identify new opportunities for the design and redesign of physical spaces towards active learning and connection with students. However, researchers have identified that faculty need opportunities to develop confidence in using active learning strategies before they can fully exploit these spaces designed for active learning (Levesque-Bristol et al., 2019). The roles of academic developers and educational technologists in supporting colleagues towards more effective use of new kinds of learning spaces is therefore critical and needs to be explored (Clegg, 2009; Fisher & Newton, 2014; Jamieson, 2013).

Learning spaces are being redesigned to try and implement active learning pedagogies that help students strengthen the skills required to be competitive in job markets both nationally and internationally. Research on teaching and learning spaces often assumes that active learning spaces enhance instructor's ability to implement active learning pedagogies (Brooks, 2010). However, active learning research generally relies on student perspectives, self-reported data, and academic achievement—not on instructor's perspective. In their research, McDavid et al. (2018) focused on instructor's self-efficacy in teaching student-centered pedagogies in both active and traditional learning spaces. Their findings challenge the assumption that experienced instructors will feel successful in any learning space.

There is also an underlying assumption that building active learning spaces will improve student learning, success, and retention at the same time enhancing instructor teaching. Institutional research conducted at Purdue University, however, challenges this assumption (Beaudoin et al., 2016). Figure 1 visualizes the interplay between the physical learning space, instructor teaching practices, and the use of institutional resources. The horizontal axis represents a continuum of instructor pedagogical practices ranging from traditional lectures to entirely active learning. The vertical axis represents a continuum of learning spaces designed from front facing, fixed desks to reconfigurable furniture.

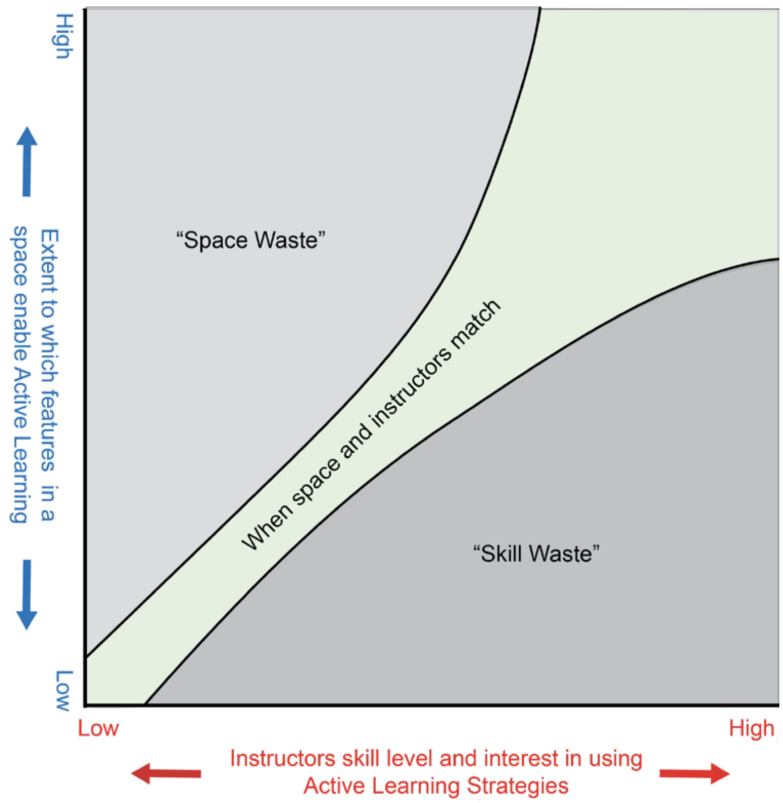


Figure 1: Visualization of Learning Space and Pedagogical Practice Alignment

The center area represents the ideal alignment of an instructor's preferred teaching practices with the learning space they teach in. The top left of the figure represents when an instructor is timetabled in an active learning space, but would rather lecture or does not know how to take advantage of the space. As McDavid et al. (2018) reported, an instructor's self-efficacy might help them overcome the constraints of a

learning space. However, active learning spaces are more likely to enable instructors to implement active learning practices. Beaudoin et al. (2016) go on to suggest that instructor development should be considered when timetabling with learning spaces.

Open education (Cronin & MacLaren, 2018; Weller, 2014, 2018) has provided a useful lens through which to view the potential changes we might make to the use of learning spaces by adopting student-centred and active learning approaches combined with effective uses of mobile and other technologies (McAvinia, FitzSimmons, Harvey & O'Rourke, 2019). Open educational pedagogies (OEPs) emphasise giving agency to learners as contributors to knowledge and the community, seeking opportunities for experiential and active learning, and flexible forms of assessment (Cronin & MacLaren, 2018; Weller, 2014, 2018). OEPs draw on open educational resources and open access publishing. The constraints of the physical campus are diminished by open resources and open access as knowledge is moved out of locked systems and beyond institutional walls to the community, with research using online resources embedded into learning spaces (Weller, 2014). We suggest that the configuration of spaces can contribute to fostering effective OEPs.

Conclusions

In this short paper, we have discussed how Active Learning Classrooms (ALCs) are transforming the academic experience for both students and instructors. The justifications for change are manifold, drawing on learning theories, taking account of new digital technologies, and the blurring of lines between campus and other sites of learning. The construction of both traditional lecture-style learning spaces and active learning spaces continues; each bringing challenges and solutions to the inherent tension between increasing student enrollments and active learning pedagogies.

Through the collaborative work described here Purdue University (Indiana, USA) and TU Dublin are collaborating to address the challenges of active learning pedagogies as well as support instructors teaching in active learning spaces. We invite participants of this session to bring their experiences in this journey and discuss 1) the impacts of changing design on campus spaces, 2) active learning research findings, and 3) how we as a community can focus on learning spaces influencing teaching and learning on our campuses.

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