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Transitional space: learning in the spaces in-between

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Introduction

There is increasing evidence, particularly in STEMM education, that traditional didactic transmission lecturing is less effective than more active, student-centred learning (Freeman *et al.*, 2014). This mounting evidence has resulted in institution-wide curriculum review, pedagogic transformation and ongoing space refurbishments at Imperial College London, a research-intensive institution that provides the context for this work.

Although active learning is proven to improve cognitive outcomes by supporting ‘students to do meaningful learning activities and think about what they are doing’ (Prince, 2004, p.223), its examination remains largely linked to instructional contexts, with neglect for the self-directed, non-timetabled learning spaces that support a rich learning experience. This instructional emphasis is evident from the capital that Imperial College London, among other institutions, continue to invest into ongoing classroom refurbishments to support curriculum review and innovation. However, it could be argued that these changes to physical infrastructure do not accurately reflect and address the growing self-directed workload that students now contend with. Furthermore, as capital spending on maintaining and modernising university buildings in the UK approaches £3 billion annually (Temple, 2018), these refurbishments are increasingly time- and money-intensive, placing a financial strain on institutions.

The assumption that students successfully transition between passive and active learning, between directed and self-directed learning and between formal, timetabled and informal, non-timetabled spaces has meant transitional space being overlooked. By seeking to better understand student engagement with these transitional spaces as physical, curricular and cognitive spatial phenomena, this study is generating evidence for the educational importance of transitional space and using this to better understand active learning. By redesigning underutilised ancillary spaces adjacent to formal lecture spaces at lower cost than lecture theatre refurbishments, students can better self-direct active learning at moments of transition into and out of formal, timetabled spaces.

Method

This study is using a mixed-methods phenomenological approach to understand student engagement and perception of transitional space. Naturalistic non-participant ethnographic observation protocols (Somekh & Lewin, 2005) have been used to record learning behavior within a breakout space in the Chemical Engineering department (see figure 1). This breakout space is located adjacent to a raked lecture theatre that holds up to 150 students that is used predominantly for undergraduate didactic teaching. Observation of learning behavior within this lecture theatre, breakout space and transitions between the two have been followed up with brief 5-10-minute structured field interviews to collect contextual information and non-observable details from participants, such as how often they use the breakout space and what for. Individuals or small groups of undergraduate students are approached for interview when observed self-directing learning through interaction with one another or with digital technology.

In addition to these detailed ethnographic snapshots, novel use of automated occupancy monitoring data has provided temporally-stable occupancy records for the lecture theatre and breakout space. These methods, in combination with timetable context, have been instrumental in understanding cohort-level behavioral patterns.

Findings

ACEX Building, Chemical Engineering

Ethnographic observations indicate that students independently or collaboratively learn during between-timetabled session transitions using furniture, power sockets and Wi-Fi available in the breakout space to mediate this learning process. Asking friends questions about the previous lecture material or discussing problems relating to pre-assigned group work are examples of such active learning behaviors. This activity is self-directed, incidental and often unplanned and is therefore distinct from the passive learning observed in the lecture theatre.

It is posited that this transitional behavior is catalyzed by a shift in power from the teacher back to the student as the cohort exits the lecture theatre into a more democratic space with a less constraining set of rules. Students observed conversing more freely with the lecturer and with one another in the breakout space demonstrates this permissiveness, as control is no longer located with the transmitter/teacher, but with the acquirer/student (Bernstein, 1990). The learner is therefore empowered to take greater agency in engaging in peer-to-peer learning and have greater freedom to deviate from the confines of the formal curriculum.

Field interviews with students during these transitional periods have helped to bolster this sentiment. One 1st year undergraduate student reported using the space before and after lectures to "...quickly go over stuff, often with friends". This is a self-directed, collaborative form of learning and is a behavior that challenges the binary framing of 'formal' and 'informal' learning space, given this interaction approximates a formal encounter within an informal space. Several students also referred to the "convenience" of the breakout space as its primary merit and praised the "micro-community from being around other departmental members". The space therefore serves an important role in nurturing disciplinary community in addition to enabling learning and interaction. Nonetheless, students from other departments have been interviewed in this space, meaning it possesses a freedom and potential that could be leveraged to disintegrate disciplinary boundaries and territories.

Occupancy monitoring data has helped to confirm that on average, 35-40% of students attending lectures will engage in meaningful use of the breakout space before, during or after timetabled sessions. This ability to engage in transition is heavily influenced by the design of the timetable and was confirmed by a comment made by a 2nd year undergraduate student who stated that they use "...this space before a lecture and if I have time will use it after lectures". Both the physical nature of the ancillary space and the configuration of the timetable therefore contribute to the nature and effectiveness of transition.

Blackett Building, Physics

Imperial College's ongoing programme of space development and refurbishment provides interesting opportunities to use the existing methods to observe student behavior in similar spaces with different disciplinary contexts. This same methodology is being used to collect data in an ancillary space and newly refurbished lecture theatre in the Physics department which shares a comparable architectural configuration to the Chemical Engineering setting (see figure 1). The researcher is also engaging in a 'Student Shapers' project working with staff and students to use findings and ideas from the Chemical Engineering setting to inform the redesign of the Physics ancillary space (see figure 1).

Having already collected data in the lecture theatre and ancillary space pre-renovation, this phase provides a unique and timely opportunity to examine the impact of remodeling the physical nature of this fringe space on

student learning behavior and transition. There will also be opportunity to contrast the nature of transition between a traditional raked lecture theatre and a refurbished interactive auditorium equipped for active pedagogy.



Figure 1: ACEX breakout space in Chemical Engineering (left) and Blackett ancillary space in Physics (right). Note the stark difference in usage. Source: Imperial College Education Office

Conclusions

Ethnographic observation, field interviews and occupancy monitoring methods have provided evidence for the existence of a physical, curricular and cognitive transitional space between formal, timetabled and informal, non-timetabled spaces. Transitional space has received scant attention in the literature with the primary focus on ‘in-between’ spaces as original encounters in moments between the taught and the learned (Sagan, 2011). The findings of this study so far indicate that when properly supported with architectural intervention and timetable design, transitional space can be a physical extension of the classroom that is a site and opportunity for self-directed active learning as students are empowered to take greater agency than in formal settings. By renovating bare corridors, lobbies and other methods of ingress and egress at relatively low cost, transitional space represents a temporary option for preparing spaces and students for the desired increase in active learning in instructional settings.

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