Flexibility in the HE learning environment: definitions, desires and the potential of new designs of furniture to enhance it.

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Background

In their review of international research evidence relating to the impact of the school environment on learning, Higgins and colleagues include the observation that, ‘Since different room arrangements serve different purposes, it is necessary for classrooms to have some degree of flexibility’ (Higgins et al., 2005: 7 and 28). Within higher education (HE), it is sometimes suggested that flexibility is still more central, given requirements for high utilisation of space, the need for teaching and learning space to be suitable for a diversity disciplines and, increasingly, a desire for ‘innovation’ in approaches to learning.

Flexibility, however, is not a concept that is free of controversy, with discussions often based on unfounded assumptions. For instance, Herman et al., (2011) make the point that the development of moveable school desks in Europe, often linked to educational reforms of the early twentieth century and underpinning much flexibility within the classroom, were initially a response to hygiene concerns, specifically the challenge of tuberculosis and the requirements of cleaning (p.105). Furthermore, a flexible setting is only flexible within the boundaries of its design: a point made by the National Union of Teachers forty years ago in relation to the assumed flexibility of open plan space in British schools (NUT, 1974). There is also the issue of the balance between the flexibility provided by the physical environment and the concurrent flexibility that is therefore expected of users, both teachers and learners. Such issues have not escaped the notice of some scholars of educational space, with Australian researcher, Kenn Fisher referring recently to the ‘much larger question about what adaptability or flexibility means’ (Dovey & Fisher, 2014: 55). Notably, Jos Boys, working specifically within post-compulsory education, contends that flexibility, as a idea to inform designing for learning, is ‘deeply flawed conceptually’ (Boys, 2011: 27) and argues that continued reference to it reflects an ‘inability to properly map learning onto space’ (Boys, 2011: 59).

This paper addresses this notion of flexibility in the HE context through presenting and reflecting on elements of a recent collaborative research and development project conducted within our university. The aim of this research was to explore students and staff experiences of the physical environment provided at Newcastle for HE learning, considering existing provision but also as a means to develop ideas for innovative spaces and usage. Our intention is to contribute understandings from a localised study to the research base within HE, which some researchers feel is lacking, specifically in relation to the learning environment (Temple, 2008), suggesting implications for institutions within and beyond Europe.

Our research questions are:

- What is the existing situation, as experienced by students and teachers, of flexibility in HE learning environments?
- What are the needs and desires of users and managers of HE space?
- What can new designs of furniture contribute in terms of flexibility and innovation in teaching and learning?
Methodology
This was collaborative research, intended to feed into university decision-making regarding settings for learning, and benefiting from a steering group that included facilities and estate managers with academics from across the three faculties (medicine; science and engineering; humanities and social sciences). It was therefore party to the challenges and benefits noted by Alvesson (2003) in relation to doing ‘insider’ researcher within an HE institution.

A variety of methods was used to develop our understanding of the existing situation, as experienced by staff and students. These included attending a range of relevant university meetings (e.g. the Teaching and Learning Spaces sub-committee of the University’s Teaching and Learning committee; a working party of academics working with Estates to develop an innovative new space; a meeting organised by Estates to assess student views), interviewing teaching and non-teaching staff, ‘site-specific’ interviews (Duarte et al., 2015) with lecturers and a questionnaire completed by students. In addition, we investigated some concurrent development of the learning environment: the development of a new space for group learning and the installation by Estates in some seminar spaces of furniture that was intended to be flexible, through being designed to be easily moveable, and therefore to support ‘innovative’ teaching practices, such as small group activities and change between activities.

Findings
This analysis is centred on a subset of the range of data generated by the project:
- Audio recordings, photographs and notes from site specific interviews with 12 lecturers, representing diverse disciplines that include a number of humanities, social science and professional subjects, together with science, engineering, mathematics and dentistry;
- Questionnaires completed by 618 students across undergraduate and postgraduate programmes in a range of disciplines;
- Feedback on new, ‘innovative’ furniture collected through evaluation sheets left in seminar rooms and discussions with some lecturers.
- The development of a new, high capacity (126 students) space for collaborative group learning

We consider the existing situation as experienced by teachers and learners, their suggestions and needs for improvement and the reception of design intended to enhance flexibility.

Users’ experiences and desires
The interviews highlight that lecturers adopt a variety of pedagogic approaches determined by three key factors:
- Values and beliefs about teaching and learning
  engagement, collaboration, interactivity, performance, eye-contact
- Subject and disciplinary practices
  working through equations/calculations, debate, problem-solving, the magic of demonstrations
- The affordances/constraints of the teaching spaces (group sizes, furniture, AV etc.)
  inability to move heavy furniture, increase in numbers of students on some courses (lectures of 150, seminars of 50), understanding how to use the technology, use of the basics: whiteboards

The responses from the student questionnaire describing how often they experience different teaching approaches supports the information obtained from the academics that there are a range of pedagogic approaches adopted. However it is fair to say that the academics we interviewed were generally more innovative when lecturing than it would appear is the general
experience of students. 50% of students report experiencing lectures - talking from the front without any interaction – either ‘frequently’ or ‘all the time’. However, half the students also experience a similar frequency of lectures with ‘some interaction’ and 23% report frequently or always undertaking group activities whilst lecturing. A further open question asked the students how they felt about the styles of teaching and learning that they experience. Responses showed that students are generally positive, with a number specifically mentioning their satisfaction with the variety and range of approaches; the balance of lectures, seminars, study groups, workshops etc.

Student report taking a range of approaches to self-directed learning. It’s notable that although studying is done with friends at least sometimes by most students, it is studying alone that over 90% do ‘all the time’ or ‘frequently’. Reported use of different learning spaces similarly suggests a range of needs and preferences, probably driven by activity as much as individual preference (in line with the findings of Beckers et al., 2016). Taken together with the range of elements contributing to an ‘ideal place to learn’, and the contradictions inherent in some aspects, we suggest the need for flexibility for student learning through variety and choice. To an extent this parallels the requirements of teaching space – a range of spaces needed for different activities and styles, which might be achieved through differing spaces or through spaces that can be rearranged. However, the additional complication for teaching space is the desire of both teachers and learners for combinations of activities within a session. The distinction suggested can usefully be understood in terms of ‘two kinds of flexibility’, as proposed by Dovey and Fisher (2014: 61) in their analysis of school designs: the potential for layouts to be converted to support differing pedagogies (‘convertibility’) as contrasted with the ability of a space to support a pedagogy based on various spatial practices (‘fluidity’).

Potential of new designs of furniture to contribute to innovation
Our consideration of reactions to ‘innovative’ new furniture in seminar rooms and the development of a new high capacity space for collaborative group learning provide further evidence of the need for distinctions between different sorts of flexibility, as well as the possibilities for tension between them. Easily moved furniture was mainly appreciated for the ease of rearrangement within the session, but clearly also enables rapid adaptability between sessions. This is important because, although our data suggest an overall preference for grouped arrangements in seminars, there are important exceptions to this, particularly within some disciplines. Such diversity of preferences and needs was accommodated in planning the new group learning space through the involvement in the planning stages of a range of users. The completed space achieves pedagogical flexibility within sessions, fluidity, mainly through the IT, which supports a range of activities, teacher or student led, and communication within and between groups. During the planning, some potential users wanted the room to be adaptable across sessions, and this was addressed through the incorporation of some collapsible, moveable tables (others are static). This solution also enables some flexibility during a session but ability to rearrange the furniture is limited by the extensive IT provision.

Conclusions
Preliminary observations from this data support the assertion of complexity regarding the concept of flexibility. It is clear that many, if not most, learning environments can be somewhat spatially flexible (fluidity in Dovey and Fisher’s terms) if that is the lecturer’s intention, but aspects of space and usage, such as heavy furniture and lack of time, can constrain approaches to teaching and learning, thus limiting this practitioner level flexibility. In this sense, mobile or easily rearranged furniture can enhance flexibility, not determining practices but having an influence. Our research also shows that spatial flexibility is not the only way to
approach within-session, pedagogical fluidity, with IT now presenting an alternative, but that spatial flexibility and flexibility through technology may be in tension.

Students' experiences and preferences, regarding both teaching and self-directed learning, are more heterogeneous and complex than sometimes suggested. The range of needs and preferences expressed for learning, together with the mix of teaching styles currently practised and appreciated by students, suggests a different sort of flexibility, centred on the provision of radically different spaces for differing activities. This might be achieved through designing and equipping rooms in different styles. However, this risks complication and inefficiency, always concerns for the managers of HE space, returning us to the inevitable tension between Estate aims of catering for all needs and users' desires for individualised solutions, particularly across differing disciplines.

An alternative is to use furniture that supports Dovey and Fisher’s convertibility, which we might in this context consider to be flexibility at the level of the organisation rather than the teacher. Our data suggests that to an extent, mobile furniture, such as that trialled, might achieve both types of flexibility. However, this is within the relatively narrow range of practices suitable for seminar teaching with a maximum of around 40 students. There are also trade-offs in terms of maximising ease of movement through the use of wheeled chairs without tables against reducing the suitability of the room for certain activities that require table space. Overall, there is a danger of flexibility achieved through multi-purpose, multi-disciplinary rooms that fail to support any specific learning or teaching particularly well and betray a lack of identity, failing particularly in relation to disciplinary needs and cultures.

These multiplicities of types of flexibility (fluidity vs adaptability; spatial and technological flexibility) serve to underline the complexities of educational environments. This suggests the need for frameworks such as that proposed by Boys (Boys, 2011: 80-81) which has three overlapping aspects to the relationship between spaces and usage: existing spatial and social practices; designed, or redesigned, learning environments; and the users' perceptions of, and engagement with, processes and spaces. Only when the interactive and complex relationship between physical space and use is fully appreciated will we be able proceed in a more nuanced and thoughtful way to develop HE space.

References