Students' views on higher education learning environments for professional teacher education

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Abstract

There is a national debate about the connection between the physical environment and learning (McGregor, 2004), and the importance of designing the physical space to enhance the quality of learning (DfES, 2004a, 2006, 2007; JISC, 2006; SMG 2006a). This two year research project considers the views of 174 higher education students, who have undertaken professional initial teacher education programmes, on what makes an effective higher education learning environment for professional development and their evaluation of their current experience. Results confirmed the importance of high quality higher education environments to support a range of learning and teaching approaches, presenting challenges to HE in designing flexible, appropriate spaces for professional programmes.

Keywords: Learning spaces; buildings; initial teacher training.

Context

Student evaluation of their experiences in higher education (HE) is now an established part of UK HE quality assurance processes (QAA, 2005) and forms a key element in responding to students' needs. Much of this emphasises enhancing the overall learning experience by focusing on aspects of induction, support and quality of teaching (ibid). The term 'learning environments' in that debate is focused on learning and teaching approaches and commonly explores the sociological and cognitive aspects of the process (Light & Cox, 2001), and the student-centred and teacher–centred approaches within an actual or virtual classroom (see Elen *et al*., 2007; Hockings, 2005). More recently, however, attention has turned to the connections between the physical environment and learning (McGregor, 2004; CABE, 2005; PricewaterhouseCoopers, 2007). There has been a move towards an exploration of the provision of learning space as well as teaching space. The HE Space Management Group (SMG, 2006b) reports on the trend for learning space, particularly in the context of libraries and social areas, to support formal and informal learning. Generic teaching space in new buildings is taking account of the need for more flexible provision, to allow for different–sized groups working in different ways.

'The most modern higher education buildings now provide much more of their space in units which can be re-configured, and in small rooms designed for group learning.' (SMG, 2006a, p.12)

Design of learning spaces is presented as *'a physical representation of the institution's vision and strategy for learning'* (JISC, 2006) and the development of technology-rich learning spaces

promoted. Importantly, the Joint Informations Systems Committee (JISC) identifies key criteria for designing individual spaces in the 21st century.

- Flexible – to accommodate both current and evolving pedagogies.
- Future-proofed – to enable space to be re-allocated and re-configured.
- Bold – to look beyond tried and tested technologies and pedagogies.
- Creative – to energise and inspire learners and tutors.
- Supportive – to develop the potential of all learners.
- Enterprising – to make each space capable of supporting different purposes.

(JISC, 2006, p.3)

Visions for HE buildings of the future in the United States of America (USA) identify several key components which align with the JISC criteria. These include shared academic buildings, flexible/adaptable classrooms and lecture halls; larger but fewer classrooms and lecture halls; circulation space as collaboration space; multipurpose areas; group study space/lounges; and accessible technology (Schneider, 2006).

Whilst the Commission for Architecture and the Built Environment (CABE) research report on campus building design (CABE, 2005) highlights issues relating to recruitment, retention and performance of both staff and students, their findings suggest that well designed buildings impacted most positively on recruitment of staff and postgraduate students.

'*The way people feel and behave while studying or working within buildings is linked to their overall satisfaction rates and level of happiness.*' (CABE, 2005, p.8)

'staff and students were of the opinion that whilst other factors (…) had an impact upon their performance (…) the buildings and associated facilities were also a significant factor' (CABE, 2005, p.41)

In the context of the major rise in student tuition fees in England, applicant expectation is likely to prove a considerable challenge for higher education charged with providing 'value for money', flexible and effective learning environments, and may impact on student choice and recruitment.

During this same period, a long overdue state schools capital investment programme in England was launched by the UK government in 2004 via the Building Schools for the Future (BSF) scheme. Partnerships for Schools (PfS) was set up in 2005, charged with delivering an ambitious programme for secondary schools and other educational settings to inspire, motivate and enhance learning (DfES 2004b, 2006). The potential for enhanced educational outcomes and attainment were highlighted as key factors in the government capital investment programme 2004-10.

'High quality, modern school buildings, with the latest integrated ICT systems, will help to raise standards and will play a crucial part in our ambitious programme of educational reform. Our challenge is to provide attractive, imaginative and stimulating environments, which are also safe and secure places for children to learn in.' (Foreword by Milliband, DfES, 2004b, p.1)

However, the change in UK Government (May 2010) and a comprehensive review of all capital investment in schools and other educational settings (Partnerships for Schools (PfS), 2011) raised the prospect of hundreds of much needed school revamps disappearing from the list of educational priorities. The Education Secretary, Michael Gove, concluded that the BSF '*had failed to meet any of its targets*' (Richardson, BBC News, July 2010) signalling the end of the BSF programme but *'not the end of new school buildings'* – with expectations linked to cost-effective and efficient builds *'to support the crucial work of raising educational standards'* (Department for Education, 2010). The impact of these political decisions on the school building programme remains to be seen but it is clear that school learning environments for the 21st century remains on the education agenda.

Importantly, there are specific groups of higher education students, for example trainee teachers, where the issue of learning environments in school and HE sector come together. These HE students are undertaking their professional education and training in HE prior to entering their careers in the school sector, where major changes in the physical environment for the workforce are taking place. Their training and education integrates both work-based training in schools and HE study and, as professional training, it often incorporates generic and vocational space requirements within the HE environment.

This group of students offers specific challenges for those designing effective learning environments, where professional education and training courses integrate. For trainee teachers, the experience of teaching and learning within the HE environment may be in marked contrast to the primary and secondary school environments they encounter on work placements which represents a particular tension but also an opportunity to critically reflect on and evaluate professional learning environments. The importance of harnessing the enthusiasm of teachers was highlighted in a speech in 2010 by Michael Gove, Secretary of State for Education.

'I hope that the schools will be set up in a variety of new buildings- [interruption] – and in some old buildings as well. If we examine what has happened in Sweden, for example, we see that many new schools have opened in libraries, disused university buildings and observatories. They are model buildings, but I am sure we all agree that the most important thing about education is the quality of teaching and learning. That is why the enthusiasm of the teaching profession for the changes we are making is so hot'. (House of Commons Debate, 2010)

This therefore presents as a key moment to establish students' views on what constitutes a quality learning environment for the HE aspects of their professional development.

Aims

At a time where the student voice is increasingly important in informing university planning in the short, medium and longer term in terms of professional learning space, this paper reports research on students' views on effective learning environments for professional teacher education programmes.

The research aims to explore students' evaluative views on the quality of their current learning environments and their views of what makes an effective learning environment. HE professional education and training programmes involve elements of HE study and work-based training and assessment that integrates HE level outcomes and professional regulatory standards (QAA, 2005; TDA, 2008). The focus of this study therefore was on university learning and teaching environments (i.e. teaching and learning spaces) for professional programmes and specifically excluded the work-based environment for learning and professional development and other generic university learning support environments, such as library and ICT. These spaces are largely used for tutor-directed 'taught' activities and the study explores student perception of how that environment supports the learning/teaching activity (or not).

This study:

- reports on an analysis of questionnaire and focus group discussions involving 174 students on professional teacher education programmes leading to qualified teacher status at the University or Northampton (UoN), exploring their evaluative perceptions of the effectiveness of their current university learning environments and their views on the critical features of effective professional learning environments;
- suggests emerging issues for the design and development of university learning and teaching environments for professional courses in the context of national developments in HE and school sector design solutions;
- suggests emerging issues for improving university learning environments, given the timescale and funding implications for major change.

Methods

The methodological approach adopted is based on evaluative research, analysing quantitative and qualitative data to explore the views of HE students on professional training and education programmes in relation to the HE learning and teaching environment. The use of student ratings and surveys is identified as a reliable and valid tool by March (1987) and Feldman (1992) (reported in Huntley-Moore & Panter 2006) and moreover is an essential tool to establish student need (QAA, 2005). The 174 students involved in this project were drawn from a full-time initial teacher training and education programme (ITE) leading to qualified teacher status at UoN, with questions focused around their perceptions of the importance and quality of the physical environment; the importance of specific learning and teaching approaches; 'rating' personal experience of accommodation; and identification of specific aspects rated as important for their own professional development.

Questionnaires elicited responses using a 5-point scale and also offered opportunities for qualitative open responses. It aimed to elucidate students' views on effective university learning and teaching environments (i.e. teaching spaces), specifically excluding work-based elements and general university library and Information and Communication Technologies (ICT) provision. Focussed interviews with self-selected ITE participants (10) about the quality of learning and teaching environments were also drawn upon. Interview questions included opportunities for students to expand on issues raised in questionnaire responses with areas of focus that included general teaching rooms; specialist teaching spaces; optimum group sizes; use

of ICT to support teaching and learning approaches. The research also draws upon other sources of evidence for triangulation, including module student evaluations and annual programme review documents linked to the university's formal quality assurance procedures.

Results

Students' views on their experience

89% of the students rated the quality of the university learning environment as important in relation to their own learning. 42% rated this as very important (highest rating). No student rated it as unimportant.

94% of the students rated their experience of university learning environments as at least satisfactory. 71% of the students rated their experience of university learning environments as very good/good, but only 14% awarded the highest rating (very good).

Students commented on the positive features of learning environments they had experienced that had enhanced their learning: well equipped/resourced 'specialist rooms' for practical-based learning (32%); ICT (14%); displays (13%). Their comments included:

'Professional people may be more aware of their environment and may choose to study somewhere they feel their needs are catered for more effectively if not delivered in the first place.'

'Specialist rooms need to be suitable for the activities based in there and just for that subject. Access to resources is vital for being able to learn about practical aspects of a subject.'

'Specialist rooms for practical learning is vital.'

'Storage allows rooms to remain tidy and the resources are always on hand and accessible for students.'

Specialist rooms were associated with effective time management and displays – both in relation to students' own learning experiences and also having aspects of 'best practice' modelled for them. They reported:

'Having resources available straight away….being able to move….so you've got enough room to work in…'

'Science (education) rooms were spacious, tables already in groups and resources available.'

'….when you have a specialist room you can have the relevant displays up and it shows how you can lay out your classroom…in the English room they've got a reading corner….'' Art (room) allows for creative flow and thinking outside the box….'

Students commented on the aspects of the university learning environments they had experienced that they felt had detracted from their learning experience: space/size of room (64%); ventilation and temperature (9%); tablet seating (8%); and poorly organised rooms (8%).

'Teaching space was limited and impractical.'

'Being squashed into small rooms!'

'Far too small for groups to work in comfortably. Too cramped, poor ventilation, not enough furniture, no suitable storage and moving space. Rubbish rooms!'

'Cramped stuffy classrooms with not enough natural light.'

Students' ratings on match to learning and teaching activities

Students were asked to rate the importance of specific types of learning and teaching activities for their professional education and training and the appropriateness of the environment within the university on a 5 point scale (Very Good to Unsatisfactory) (Table 1).

Activity*	Importance of L&T Activity		Accommodation	
	Very important	Very important/ important	Very good	Very good/good
Lectures	35%	87%	31%	85%
Seminars	55%	93%	12%	64%
Workshops/ Practical	61%	95%	20%	73%
Tutorials	53%	94%	23%	79%
Group work	45%	89%	20%	75%

Table 1. Student ratings: learning and teaching activities (% very important/important) and accommodation (% very good/good)

*Note on approximate group sizes for each activity: Lecture size: 100+; Seminars: 15-25; Workshop/practical: 15-25; Tutorials: 1-5; Group work: 4-8.

87% of all students identified all these activities as very important/important for their professional education but the actual accommodation they had experienced for these activities generally received lower ratings of overall satisfaction (64%) with only 12% recording highest approval. There is a marked gap between students' views on the high importance of seminars and workshops and the low number of highest approval ratings for their actual experience of the accommodation for these activities. Lecture rooms received the highest overall levels of satisfaction in terms of being 'fit for purpose'. Tutorial accommodation was ranked second,

however, issues of confidentiality for tutorials in a multiple occupancy office was identified as problematic.

'I found it distracting having a tutorial in an office for 3 people – I would prefer it if lecturers have an office of their own.'

'Banked lecture rooms make it easier for everyone to see.'

The Initial Teacher Training and Education programmes at UoN have specialist accommodation for subject specific professional development, including English, mathematics, humanities, religious education (RE), art, science and technology, information and communication technologies (ICT), and physical education (PE). 61% students rated specialist rooms as very important for their professional development as teachers. Generally, these subject specialist rooms received far higher satisfaction ratings when compared with other university teaching accommodation. The reasons are likely to be complex with one possibility being a greater sense of student and tutor 'ownership' of the space contributing to a shared sense of purpose within the learning and teaching activity. However, the spread of ratings was very wide with some specialist rooms receiving over 50% top rating (science and technology) whilst two received the lowest of the 'very good' satisfaction responses at 6% (humanities/RE) (Table 2). The worst rated accommodation was invariably linked to issues of physical comfort such as space, ventilation and temperature.

Specialist subject accommodation	% Very good
Science and technology	52
Physical education	37
Art	35
ICT	27
English	27
Mathematics	25
Humanities/RE	6

Table 2. Student ratings: Subject accommodation (% rated very good)

Students' views on teaching group size

Students' identified their preferred learning and teaching group size (excluding lectures) as less than 20 (61%) but small groups with less than 10 were not rated highly. The students' comments prioritised the importance of opportunities for students to contribute to discussion and share ideas (42%), group work activities and interaction between students and lecturers (36%), and individualised attention (13%). Flexible physical space is, therefore, logically identified as providing a vehicle for a range of interactive teaching approaches.

'Small enough to get enough attention from the lecturer – but big enough to get some kind of group dynamic.'

'It's a bit like being back at school again isn't it? You just need to feel comfortable in your group…. 21 was a good size group because that was enough people to do group work and enough to feedback as well.'

'...enough to promote lively discussion but not so many as to be overwhelming.'

'At my previous University I thought there were way too many people so it feels a lot better here – you're able to speak up more and you feel more comfortable with less people in the room and being taught with the same group all year makes you more likely to speak your opinions.'

'it's easier to break into smaller groups for activities and mix/bond with fewer in the group. The makeup of the smaller groups can be varied therefore leading to greater learning.'

Student's views on effective physical space features

Students were provided with a list of 18 features and asked to rate these (5= very important; 1= unimportant). The mean scores were calculated revealing a rank order for the features in terms of designing an effective professional development environment for teacher education (Table 3).

Feature	Score	Rank Order
Flexible space	4.56	1
ICT –tutor delivery	4.50	2
ICT -student	4.46	3
Temp/ventilation	4.43	4
Lighting	4.34	5
Access to Resources	4.30	6
Table & chairs	4.12	7
Access to water	4.05	8
Specialist rooms	4.01	9
Pleasing environment	4.01	9
Storage	3.93	11
Moveable seating	3.92	12
General rooms	3.86	13
Linked displays	3.63	14
Art displays	3.05	15
Access to tea/coffee	2.72	16
Tablet chairs	2.48	17
Fixed seating	2.25	18

Table 3. Student ratings: rank order of important features for teacher education environment

Students rated flexible space very highly, which also accords with the higher rating given for tables and chairs and movable seating rather than fixed and tablet chairs. The importance of the availability of information and communications technologies for tutors was also rated as an important feature of an effective learning environment, slightly higher than ICT for students.

The student interviews and open responses identified the overall importance of a comfortable learning environment and the flexibility and space required for greater interactivity in learning. The access to resources and ICT also chimes with this notion of interactivity.

'Need to be comfortable and hydrated to learn. Tablet chairs are awful, proper tables and chairs essential.'

'Need to be warm and light to be comfortable. Some alternative ways of teaching (resources) to keep interested. Moveable seating and tables so can do group work together.'

'I think a comfortable and pleasing environment is really important for learning.'

'Fixed seating is inflexible for group work, uncomfortable and cramped.'

'ICT access needs to be a priority. Access to resources are an important feature in a professional learning environment.'

'ICT is key to teaching/learning in the progressive classroom.'

Issues relating to ICT and flexibility of access for students appears to be linked to students' current or recent experiences of 'blended learning' (for example, accessing the university VLE and slow download times). Interview and open responses from students included the following:

'.....if you're looking at 'planning' in a session for example I can see the need to use the laptops and be connected to the framework or you could maybe google sites to find lots of teaching resources that you can use so knowing that they're available would be good but it has to be fitting to what the session is covering – you don't need to have it all the time –....'

A recently reported virtual learning centre development at Edge Hill University (Tickle, 2008) highlights the need to have the potential of new technology 'modelled' for students: *'A thorough induction into making best use of online content is vital for students to explore the potential of virtual learning environments with confidence....'*

Re-thinking flexibility in terms of space and how students may be afforded opportunities to access a wide range of resources (both physical and virtual) is potentially crucial to developing graduate key skills of independent learning and creativity.

Personal comfort also ranked very highly with lighting, temperature and ventilation appearing in the top five of the overall rank order. When asked to rate the importance of lighting and heating/ventilation almost 90% of students rated this as important/very important.

' You need a bit of ventilation…if it's warm I tend to fall asleep – the windows get steamed up in winter… and it would be a bit smelly as well….'

'I think NATURAL light is so much better than striplighting but if not then spotlights or something naturally bright…'

An emphasis on basic heating and ventilation mirrors some of the findings from the CABE report (2005) where problems with heating systems and/or a lack of ventilation, too much or too little light and acoustics were cited as negative factors of building design by staff and students. The PricewaterhouseCoopers review summary (2007) also concludes that:

'design affects learning: Empirical studies show that design attributes such as noise, heat, cold, light, and air quality impact on teaching and learning.' (p.E1)

During our own interviews, students were asked to indicate a minimum level of specification for teaching spaces and mentioned space, lighting, ventilation and seating. When asked for examples of current rooms judged as 'good' – space and flexibility were mentioned first together with levels of appropriate ICT provision:

'Good lighting obviously – adequate room for the students AND good quality seating is important as well…'

'…. a good room is bigger and laid out better……' 'You can change it round…but you need space to be able to do that…'

'…. This is a good room with an interactive whiteboard so you're able to play videos…and use PowerPoint…'

46% of students in the sample had experience of other higher education environments. Of these, 60% indicated that conditions were comparable to this university, 30% were better and 10% were worse. This suggests that the views on environments would be applicable in relation to many higher education institutions.

The findings confirm that students identify personal comfort as an essential foundation for a good learning environment. It would appear that in our drive to create new and exciting environments to accommodate the 21st view of learning, we have sometimes neglected some of the more basic requirements for effective learning.

Conclusions

The students on these professional teacher education programmes confirmed the importance of high quality higher education environments to support a range of learning and teaching approaches. In general, their experience in higher education did not match this expectation, where lecture rooms received the strongest support as generally 'fit-for-purpose' in relation to the teaching and learning approach.

In agreement with the literature on designing learning spaces, students valued highly ICT rich environments within their learning spaces for tutor and student use. They also identified the importance of the flexibility of space to support different group working, access to resources. They identified issues in relation to furniture and storage that supported greater interactivity.

In contrast to some of the earlier literature, but in accordance with some of the outcomes from the CABE report (2005) and the PricewaterhouseCoopers review (2007), these students emphasised the importance of personal comfort in terms of temperature, ventilation, light, overall space and access to water. Similar preferences were noted by a broader sample of university students in a social learning study (Powis, 2010). The PricewaterhouseCoopers review findings note that *'(...) attributes such as noise, heat, cold, light and air quality impact on teaching and learning'* (p.E1) and whilst the positive impact of good design is not yet entirely proven add that *'The negative impact of poor design is more evident'* (ibid p.E2). Students also noted the importance not only of a modern and pleasing visual environment, but one that was congruent with their professional field. This latter point appears to be linked to a need for HE to model best professional practice across all dimensions but, fundamentally, that students need to experience teaching and learning within environments that impact positively on them as learners in order to effectively support their continuing professional development. As stated at the outset, these HE students were undertaking their professional education and training in HE prior to entering their careers in the school sector, where major changes in the physical environment have taken place (DfES, 2004a; 2006) and where the issue of the physical environment remains a key debate in the context of quality of education (DfE, 2010). In this context, these future teachers' experience of the HE environment may support them in contributing to such workplace discussions on the relationship between the physical environment and learning: a debate that will impact on the experiences of children over decades to come.

This offers challenges to HE in designing spaces for professional programmes, but in the context of the current government's continuing commitment to rebuild or refurbish schools (DfE, 2010) then this is a particularly pressing challenge that faces all HE institutions involved in teacher education.

JISC (2006) identifies a number of HE learning environments that meet its criteria for effective 21st century learning spaces, which embed technologies and accommodate flexible learning. Many of these require new build but some examples illustrate how experimental teaching spaces can be created within the constraints of an existing structure (see The Robinson Rooms, London School of Economics and Political Science; University of Strathclyde, Dept. of Design Manufacture and Engineering Management – JISC, 2006). These provide exciting models for flexible learning and teaching models which prioritise personalised and collaborative learning.

In the short term, however, before the HE learning space revolution is achieved, tutors need to work with students to critically reflect on and adapt current learning environments and teaching and learning strategies, listening to students' views to adapt teaching and learning to match the constraints of the environment. Students who were interviewed were alive to the problems and able to suggest working solutions through constructing different learning scenarios, including different size groupings, directed time and activities, and more extensive use of Virtual Learning Environments.

The physical learning environment in most higher education institutions will offer challenges and constraints, nevertheless a creative approach that looks at shaping appropriate and effective learning and teaching strategies in tandem with students can enhance their current experience. In an age of austerity following the global recession, working with students to rethink prioritises for adapting and developing current teaching space offers a way forward.

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