Design as a Social Practice: The Experience of New Build Schools

Abstract

This the second of three papers which together explore the complex relationships between school design and educational practice. The first paper considered the ways in which designs may be put to use in a multitude of practices. This paper explores the ways in which design influences the perceptions and actions of students and teachers at five UK secondary schools. An understanding of practice differences at these schools extends typical Post Occupancy Evaluations (POEs) which focus on environmental issues such as acoustics, lighting and temperature, typically uses quantitative methods and often fail to explore how different environmental factors interact with users through time (Hygge 2003; Galasiu and Veitch 2006; Shaughnessy et al. 2006; Winterbottom and Wilkins 2009). There is also a lack of attention to the ways in which the processes of occupation may shape the experience of such spaces (Stables, Learoyd-Smith, Daniels and Tse, 2014). The study involved case study profiling to document a range of key issues discussed by teachers and students at each of these schools. These findings contribute to the development of a more holistic understanding of the ways in which design may contribute to processes of pedagogic transformation.

In the first paper we argued that spaces that are designed for specific approaches to teaching and learning may be transformed when these spaces are used in practice. We have evidence that subsequent changes of leadership often involve further modification of the spaces and the practices of teaching and learning. In this paper we further suggest that these changes have significant consequences for the everyday experience of schooling as evidenced in the comments and actions of teachers and students.

These issues are of particular importance at the moment. The National Audit Office (2017) has brought public attention to the parlous state of the school building estate. They point to

three concerns: the condition of the school estate; the rising demand for school places and problems with delivering capital projects. It is clear that we need to learn from the experiences and outcomes of recent approaches to designing and building new schools.

> As the Department recognises, significant challenges remain. The condition of the school estate is expected to worsen as buildings in poor, but not the worst, condition deteriorate further. Pupil numbers are continuing to grow and the demand for places is shifting to secondary schools, where places are more complex and costly to provide. The Department, local authorities and schools will need to meet these challenges at a time when their capacity to deliver capital programmes is under growing pressure as revenue budgets become tighter. NAO (2017) p.12

Introduction

In this paper we will present an account of research which examined the relationship between the future of schooling as designed and the practice of schooling as enacted. More specifically, this paper will discuss the perceptions of students and staff in schools in which there may or may not have been contradiction between practice as designed and practice as enacted.

The findings relate to a more general question as to whether design can change practice. Does design make any difference to practice? Our answer is not a simple yes or no, rather it calls for a reconsideration of the relationship between the two. The relationship between design and practice has a history littered with suggestions that design alone can change behaviour locked in conflict with those that suggest that it has little or no impact (Sailer and Penn, 2010). Neither argument has developed a sophisticated model of the relationship between the two. Recent empirical work continues to suggest a relationship between the built environment and learning potential (e.g. Barrett et al 2013) Furthermore, whilst there is a body of research

which explores the relationship between buildings and pedagogies (e.g. Burke, 2010; Burke and Grosvenor, 2003; 2008), to our knowledge, there is a gap in research which explores the relationship of an educational vision to the creation, use and maintenance of physical space and, more importantly, how this relationship impacts on perceptions of educational experiences.

The selective use of what counts as evidence continues to be a feature of the policy making landscape. The relatively recent major policy change with regard to the degree of central control over school design was made amidst claims of "no firm evidence" of a relationship between school renovation and improved results (Vasagar, 2012) despite the fact that, as Mahony & Hextall (2013, p10) point out that there is a 'a growing body of research on the educational effects of newly designed schools (e.g. Higgins et al, 2005; Woolner et al, 2007; PriceWaterhouseCoopers LLP, 2007; 2008; 2010). There has been recognition of the complex nature of the influences that are brought to bear on design and on the nature of the knowledge that is needed for design to 'work'.

> The struggles to agree upon what counts as design knowledge and its cultural identity can therefore be perceived as affecting and being affected by a complex system involving economy, production, social significance, consumption, use of objects, and so on. Carvalho and Dong, (2006) p.484

All accounts of the relationship between design and practice have, at some level of articulation, a theoretical base which directs and deflects attention. We will now outline the theoretical assumptions which underpin *Design Matters?*.

Theoretical orientation

Unlike most previous research, this was a collaborative study bringing together architectural and educational perspectives. We draw on socio-cultural psychology as we consider the relationship between design and practice and the impacts on individuals.

In the Design Matters project school buildings are understood as artefacts which mediate pedagogic processes. Vygotsky (1987) viewed the concept of mediation as being central to his account of social formation of mind. It opens the way for the development a non deterministic account in which mediators serve as the means by which the individual acts upon and is acted upon by social, cultural and historical factors in the course of ongoing human activity. We argue that in order to understand processes of mediation it is necessary to take into account ways in which activities are structured by their institutional context (Daniels, 2001, 2008). Vygotsky attached the greatest importance to the school itself as an institution. His particular interest lay in the structuring of time and space and the related system of social relations (between pupils and teacher, between the pupils themselves, between the school and it surroundings, and so on) (Ivic, 1989).

In a discussion of his conception of cultural psychology which is heavily influenced by Vygotsky's writing, Michael Cole provides an account of the term 'prolepsis' understood as a cultural mechanism that brings the end into the beginning (Cole, 1996, p 183). In the context of child development he argues that:

> "The distribution of cognition in time is traced sequentially into (1) The mother's memory of her past, (2) the mother's imagination of the future of the child and (3) the mother's subsequent behaviour. In this sequence, the ideal aspect of culture is transformed into its material form as the mother and other adults structure the child's experience to be consistent with what they imagine to be the child's future identity. (Cole, 1996, p. 185)

In the context of school design we suggest that an ideal aspect of culture (the theory of pedagogic practice) is transformed into a material form (a building) as the commissioners and architects attempt to structure the teacher's and student's experience of schooling to be consistent with what they imagine to be the future practices of schooling.

However proleptic instruction also suggests instruction that takes place in anticipation of competence. Thus a learner may be encouraged to participate in an activity which as yet they cannot perform alone. This assumption or anticipation of competence in a social context supports the individual's efforts encourages the learner to make sense of the situation in a powerful way. As Reid and Stone (1991) note, what is meant is not only determined by the physical context, however, but also depends on the social context of the *adult's intended goal*. Thus, the child is led to infer a new perspective, one that is the *joint product* of the child's own initial perspective and that of the adult. The case of design is radically different from this kind of instructional setting. There is no social context in which children and staff are encouraged to enact the practices of schooling with forms of competence imagined in the design. Most designers often do not have the opportunity to engage with the practitioners once the building has been occupied. The implicit assumption is that the practice will be mediated by the artefact that is the building which is laden with the new imaginations of practice. This theoretical position suggests that if a design is to change practice then practitioners should be in receipt of the forms of social support or leadership which promotes the imagined form of practice. They have to learn to use the design.

Just as in the literature on teaching and learning theories of determination are challenged.

> 'Adult wisdom does not provide a teleology for child development . Social organization and leading activities provide a gap within which the child can develop novel creative analyses.' (Griffin and Cole, 1984, p.62)

At the outset we were sceptical of accounts of design as intervention that would change behaviour in the absence of patterns of social interaction and cultural influence that would take advantage of the possibilities that designs afford. As the headteacher of a newly built school remarked '*the design is a provocation to learn differently but it's what you do inside it that matters*'.

The Case Study Schools

The five schools discussed in this paper were part of wave 3 of the Building Schools for Future (BSF) programme introduced in 2004. These were designs that aimed to provide inspiring learning environments and exceptional community assets over an extended period. The intention was to ensure that 'all young people are being taught in buildings that can enhance their learning and provide the facilities that they and their teachers need to reach their full potential'. The design process was to involve "proper consultation with the staff and pupils of the school and the wider community' (DfES 2003a: 63) in order that "authorities and schools will be able to make visionary changes and enable teaching and learning to be transformed. (DfES 2003b: 7).

The initiative involved the decentralisation of funds to local education partnerships (LEPs) who were required to build and improve secondary school buildings as well co-ordinate and oversee the educational transformation and community regeneration that was envisaged.

> The aim is not just to replace crumbling schools with new ones, but to transform the way we learn. This represents a break with the old way of doing things and should change the whole idea of 'school', from a physical place where children are simply taught to one where a community of individuals can share learning experiences and activities. (Cabe, 2006: 1)

These new schools were spoken of as 'new cathedrals of learning' in which flexibility, adaptability and visibility were key components of designs which were seen as crucial for the preparation of young people to participate in the rapidly changing social and labour market landscapes of the 21st Century. New technologies were understood as crucial tools in a form of schooling that would witness increased emphasis on project based enquiry in which the boundaries between traditional subject knowledge domains and between school and community were to be weakened.

The term 'personalisation' was a common feature of many policy documents and although it was linked to a myriad of meanings, generally became associated with shifts in modes of control over learning with students taking more responsibility for the selection, sequencing and pacing of their work in school. The personalised approach was to be made feasible through access to new technologies and the availability of a mixed economy of open and flexible spaces. The argument promoted in favour of this significant investment was couched in terms of transformation of learning and teaching along with enhanced participation and community involvement and engagement. Major shifts of control were envisaged with learners taking a far greater degree of responsibility for their own learning trajectories.

While, in the design and build of a school, it is easy to envisage the investor as the client, one must also consider the position of the student. The mutual shaping of person and place is recognized by Burke, who suggests that the '*vision of school as a transformed space for learning ... could not exist separately from a transformation in the view of the child as artist of their own learning and builder of their own worlds'* (Burke, 2010: 79). However, there are very few examples of a sociocultural analysis of school architecture as a structuring resource.

Accordingly we set out to investigate the ways in which the design of spaces within schools mediates and shapes practices of teaching and learning.

Post-occupancy evaluation (POE) allows benchmarks and patterns to be established that can be captured and used to inform future design. POE should also inform the decision of how best to invest future capital expenditure for maximum return. The now defunct British Council for School Environments (BCSE) conducted a review of post-occupancy evaluation methods, concluding that a POE framework should be set up to inform school design on a national and even international level (BCSE 2009). Current architectural research on school environments tends to focus on environmental performance in terms of factors such as natural daylight, air quality, temperature, and noise level. Woolner *et al*. (2007) warn that such research in isolation can lead to confusing, and often contradictory, conclusions; however, Barrett et al (2015) also acknowledge that inadequate temperature control, lighting, air quality and acoustics have detrimental effects on concentration, mood, well-being, attendance and, ultimately, attainment. Such research is therefore relevant, but, arguably, educationally limited. By contrast, Moos (1979) suggested that the learning environment is best understood as resulting from a complex interaction of social, cultural, organisational and physical factors. Benito (2003) directed attention to the meanings of school design and the cultural function that is assigned to schools. From this perspective school architecture should be open to a form of analysis which takes account of educational discourses and practices, and actors' social norms.

Informed by previous studies the *Design Matters?* project took a very broad view of the ways in which meanings are made. Among these, Cooper (1981) examined the conflicts that arose from differences in pedagogic orientations expressed in school design from those adhered to by most teachers. More recently Leiringer & Cardellino (2011) have argued how important it is to find a balance between good design, commercial realities and educational approaches.

Such findings suggest a need to understand the ways in which philosophies and discourses of design and educational practice intersect at particular moments and over time. Burke and Grosvenor (2008) examined the history of the relationship between school design and educational philosophy/practice while Cooper (1985) has argued that school building may be regarded as the physical embodiment of the educational system and the changing philosophies which inspire it. Where Prosser (2007) directed attention to the ways in which teachers' and pupils' everyday behaviours shape and in turn are shaped by school culture, which is manifested in part visually in the built environment. Cooper (1985) also noted the importance of non-teaching spaces, which are taken-for-granted yet deeply embedded in the teaching and learning behaviours of generations of teachers and pupils. Prosser (2007) argues that the design of schools reflect both developments in educational philosophy as aims are re-defined and new physical standards and methods of construction are developed (p. 254). Although Dudek (2000) argues that, given respective timescales, building to match educational theory is implausible.

Design Matters? extended this analysis by assessing the impacts of contemporary design on users in terms of its implications for educational theory, everyday use and pedagogical outcomes. As Kraftl (2006) noted, the 'discourse' of the school can be understood very broadly: '…buildings involve constant, material *work* (as much as inhabitation) for discourses invested in them – such as "childhood" or "education" – to retain their meaning' (Kraftl 2006: 488). The project sought to enhance understanding of the qualitative dimensions of school environments, bringing out the vital importance of perception and use of space by students, teachers, parents, and others, both in terms of what is 'denoted' through design and educational aims, and what is 'connoted' in terms of the significance of such spaces for users. This included examination of how teachers utilize the various spaces of the school specifically

to support their teaching, in order to aid designers to improve the spatial tools available to educators.

Methodology

The paper draws on data collected from five secondary schools, all within the same locality under the guidance of the same Local Authority Transformation Team. All of the secondary school buildings were either built or refurbished between 2010 and 2012. However, while all schools included within the sample were to receive the funding, for one of them it was withdrawn after the initial design and consultation

Each school constituted a unit in a series of case studies designed to probe in depth the working practices of practitioners (teachers, headteachers) and students in this subsample of schools. This development drew heavily on and developed legacy materials from the *Design Matters?* project.

Two cohorts of students in subsequent years of Year 6 in feeder primary schools and Year 7 of the secondary schools were surveyed. In this paper we report the data captured in individual and small group interviews.

A sample of these students engaged in Nominal Group Technique tasks in groups of about six. The procedure is: 1) Individuals generate ideas during or before the group meeting; 2) Each person takes a turn reading one of their ideas and ideas are written in a central place until all are listed. 3) The group discusses the ideas, possibly adding ideas to the list. 4) Each group member ranks the listed ideas. 5) Individual rankings are summarised for each idea to form a group ranking. 6) The group ranking of ideas is discussed (following Chapple *et al* 1996). This method is designed to elicit data which are not overly determined by the structure

or content of researcher questions and has a number of advantages. The creation of the initial individual list and its prioritising offsets the likelihood that respondents are influenced by the reactions of others and that the views of one or two individuals do not dominate. Each person has an equal opportunity to participate; there is also less need for respondent validation as the importance of each item is considered as part of the prioritising (MacPhail 2001). In effect the respondents code their own data, reaching agreement on categories and coding them accordingly with less opportunity for the researcher to impose their own view. The specific questions we asked at the two time points (end Year 6 and beginning Year 7) varied slightly, but in each case we asked students to list the places they felt were most important and/or most enjoyable, and their opposites, and led the discussion from these initial lists. At time points 1 and 2, we focused on what we felt would be, or was, different about life in the new secondary school.

Interview data were collected from headteachers which illuminated their experiences of the design and visioning, build and occupation processes. The headteacher who was involved during this initial design stage is referred to as that of 'occupation 1', head teacher changes subsequent to the design and build have become referred to as occupation 2 and so on. In-depth interviews were collected with head teachers across occupations; these discussions have illuminated their pedagogical orientations, preferred ways of working and perceptions of the wider community. The interview process allowed interviewees to share their experiences of particular social phenomenon (Wahyuni, 2012), and while these interviews followed a loose structure they were typically led by the issues and experiences which emerged at each school. Responsive interviewing (see Rubin and Rubin, 2005) was used to obtain a deep understanding of particulars specific to experiences relating to these buildings, allowing interviewers to confirm and clarify unexpected points of the discussion.

The data from all groups was transcribed and coded by a team of researchers. This highlighted a number of themes which were shared between heads and/or students, but also the significant variation evident across the sample. Through maintaining a focus upon how these individuals use their spaces, profiles for each one of the schools were created, containing a range of context descriptors from staff and students detailing opinions of the building, its feature and design. The strength of the study emerges through the triangulation of data; which highlights the shared experiences of the built environment but also the impact upon the various motives of the social actors who occupied the space. The reported case studies offer insight into the localised phenomenon taking place at each one of the secondary schools. The data gathered from each one of the sample schools also permits a comparison between the observed and reported practices of students and teachers (Wahyuni, 2012). While these case studies do not represent generalisations they have been used to more accurately depict the social phenomenon taking place within each circumstance (Scapens, 2004).

Findings:

In an earlier paper Daniels et al (2017) described how the designs of the five case study schools came to fruition. These five case study schools, referred to as Schools A-E, are all part of the same locality, designed under one educational vision and led by the same County Council. In this paper we describe how these five buildings are experienced by the students, teachers and headteachers of the schools and how one design are perceived in different ways, subject to the relation between design and practice in occupation.

School A

In School A, the headteacher (A1) led the development of the educational vision from the start of the project and subsequently took on the role of the quality and design compliance

monitor in the process to ensure that the design team and contractors delivered a building that met the requirements of the intended educational vision.

> '*It all began by us really thinking about what we saw learning looking like in the 21st century, what sort of building would you need to facilitate that.' (*Headteacher A1 interview)

The design has five zones of highly glazed teaching spaces which wrap around a central green 'heart' space where the main circulation spaces and movement are located. The deputy head discussed the importance of the form and visibility of the design on how it has changed the school community relate to each other.

> *'Everything works in a circular way, so you are always encompassing each other, encompassing the learning. The students are always looking towards each other and can feel a part of one big community.'* (Deputy headteacher A1 interview)

The headteacher commented on dramatic improvements in behaviour since the occupation of the new school building. She attributes this to the high level of visibility in the new design which was absent in the old school.

> "*I'd been at the old school for a very long time and it was quite a tough boys school with quite a tough, lots of fights at lunch times, lots of aggression you know if you came here at lunch time you would have seen a row of boys sat outside my office covered in blood, yeah, that was the environment that they were in, there's none of that here and I'm not thinking it's because the boys have changed but it's because they know they can be seen and actually if you see something, you're there you can deal with it*" (Headteacher interview)

Young people were inducted into the expectations associated with new forms of practices in the newly designed spaces. The deputy headteacher referred to protocols and expectations for students in the new open learning zones.

> "*There are expectations, there are zone protocols, what they can and can't do in the zones, there are expectations about the best way to...you are here to learn, you are here to progress, you are here to become better learners and it's not just about understanding content*" (Deputy headteacher interview)

> *"Encouraging youngsters to regulate themselves to some extent...we have a lot of emphasis upon independence in this school...we've put assessment into place that is linked towards independent learning as well*" (Deputy headteacher interview)

The students responded enthusiastically to the demands of the new forms of pedagogic competence.

> *'In our old building, we had cramped classrooms and dark long corridors. It felt gloomy and depressing. When we came to this school, it just felt modern. There are five big zones where each space can fit four classes. We have open learning and everything changed.'* (L6th student interview)

They also identified specific benefits in terms of use of space:

> *'I feel like I can learn better in a zone than in a classroom. In a zone, you have more space and you can sit with people you work well with. You can move around and get help from each other and different teachers.'* (Y7 student interview)

The headteacher could also point to objective measures of improved performance both in terms of use of space and academic outcomes:

> *'Design does matter, the conversations, the way the zones are set up, the way students engage with each other. Since we have had this new building, results have improved enormously. We have more students stay on, we have more students go to University. This building makes them feel wanted and gives them an aspiration.'*
> (Headteacher interview)

The headteacher pointed to how the new design allows the school to fully develop a different pedagogic approach that was not possible due to the physical constraints of the old building. The open zones allow students and teachers to group and re-group in flexible ways.

Staff reacted positively ----

'*The design allows us to have the flexibility to teach in large groups in the open zones and take smaller groups into adjacent classrooms that might need a smaller quieter space. We get a lot of support in this school to develop the skills you need for team teaching. It has taken some time to develop the best approach to teach groups of 100 + students as it was so different in my last school.'* (Teacher interview)

The resulting building matched the educational vision of the occupier and there was a continuity of leadership throughout the processes of vision, design, construction and occupation of the new building.

More importantly, an explicit and overt attempt to learn how to use the spaces of the design as envisioned was witnessed. The timetable and management of the school was designed to promote best use of spaces and a 'mock up' of the open learning zone and breakout spaces was constructed in the old building, as a test bed for the development of new approaches to teaching and learning to prepare teachers and students for occupation of the new design. This process of learning continued once the building had been occupied with Thursday evening meetings for all teaching staff to plan and develop effective pedagogy for shared group teaching. To some large extent these actions countered the problems we discussed with respect to proleptic instruction that there might not be a social context in which children and staff are encouraged to enact the practices of schooling with forms of competence imagined in the design. In this school there was an ongoing form of preparation for new forms of competence.

School B

School B involved a major refurbishment of an old school building and the project was led by the Local Authority Transformation Team. The design was driven by the same educational vision as school A and supported by headteacher B1.

'*The head was the driving force behind the educational vision'* (Project Architect B interview) but creative dialogue and collaboration between the architects and the school were halted and heavily managed after the contract was awarded to the main contractor.

From the first occupation by headteacher B1 contradictions between the design and the preferred practice of staff were clearly apparent. Unlike school A there was no professional development programme concerned with learning how to use the new design. Staff and students complained that the spaces were noisy and very distracting and also firmly stated that the refurbishment was not fit for purpose. Headteacher B1 initiated a programme of wall building to transform the open learning zones into cellular classrooms within 8 months of the handover from the contractors to the occupying school staff. This a physical manifestation of the contradiction between the vision of the design and the practice developed during the first occupation. An additional tension arose with the appointment of headteacher B2 (the second headteacher at school B). Headteacher B2 was the former deputy at school A and was heavily influenced by the pedagogic design and methods led by the head of school A. The original design of the open plan learning zones at School B were similar to the design at school A. Headteacher B2 expressed concern about the contradictions between design and practice in the previous occupation.

> "*if you try to deliver traditional style teaching in an open plan environment, it isn't going to work.*" (Headteacher B2 interview)

> *"The staff at this school are not playing to the benefits of the design at the moment, they're still fairly traditional pedagogically. The teachers are doing a good job but they're not making the most of opportunities that this building can offer."*

Headteacher B2 articulated a strong pedagogic argument for the mixed economy of open learning spaces and enclosed classroom spaces that was witnessed in the refurbishment before the new walls were introduced. He recognised that there was a need to convince parents and teachers of the pedagogic benefits of a mixed economy of spaces

"What *we're developing here is a very different model and the example I use to explain to the parents is when you go into schools like this you have to develop a different pedagogy which takes advantage of the spaces that you have"* (Headteacher B2 interview)

"Each teacher has to manage a broad range of abilities in a traditional classroom of 30 students, when you combine those classes into an open plan area, it gives greater flexibility to take smaller groups off and tailor the teaching to different needs."

He was particularly concerned with the benefits of larger flexible groupings of students in which need could be more closely aligned with provision.

"When you initially walk in you might see 80 students and think crumbs that's not very personal. But when you look into the pedagogy behind it, you actually have a team of teachers who know that these students here didn't understand X so I'm going to take them off, it doesn't matter if they were my class or...so I am going to take them off here and work there and you end up then with a dissolution of the class that looks like one big class but the phrase we used was called flexible setting so you're developing a pedagogy that was actually very close to the need and really closely matched to individuals" (Headteacher B2 interview)

However he also recognised that he faced a challenge in convincing his colleagues of the benefits of the original design.

"It's all very well having a vision but you've got to take your staff with you. I would like to take the walls down again and use the opportunities the design offers but we are not there yet. We also need to develop a staff that can work effectively together"

> *"What I want to do is to develop the model so the teachers are saying oh if that wasn't there we could do this, yes, let's knock that wall down then, these teachers are actually getting very effective outside delivering the, what I call, lecture based approach they just haven't had the confidence to pull the wall apart*"
>
> (Headteacher B2 interview)

Here again these issues can be interpreted in terms of proleptic instruction. Given the lack of preparation for new forms of practice there was no social context in which children and staff are encouraged to enact the practices of schooling with forms of competence imagined in the design. In this school there was no ongoing form of preparation for new forms of competence. This had consequences in terms of teachers attitudes to the design which stood in stark contrast to those witnessed in school A

> *'I found it so difficult to teach in the open zones, it was noisy and the students were so distracted. It's been much better since the walls were built.'* (Teacher interview)

However the students spoken with enthusiasm about the original design and dislike of the spaces that resulted from wall building.

> '*I liked the open classrooms because it was bright, open and spacious. Now the closed classrooms are the spaces I least like learning in because you get hot and stressed easily'* (Y8 student interview)
>
> *'The closed classrooms are so cramped, we can't move around and get really hot, I don't like being there.*' (Y7 student interview)

The adaptations that had been made to the original design resulted in spaces which were now too small for the current usage. The lack of referral to the original designers carried

implications for the environmental conditions in the spaces that resulted from the adaptations which are now considered not fit for purpose by students.

Whereas school A witnessed effective and ongoing forms of social support or leadership which promoted the form of practice imagined by the designers. Participants had learned to use the design. In school B there was a direct conflict between the legacy practice of the staff and the imagined practice of the design.

School C

School C is the most radical in its pedagogic vision and design initiated by the County's School Transformation Team. The intention was to deliver personalised learning using a 'schools within a school' model. The pedagogic argument that lay behind the design was for a thematic rather than a subject (discipline) based curriculum which would be taught by teachers working in teams, with students moving between large open spaces and smaller breakout spaces as they pursued a personalised pathway through the curriculum. On initial occupation the building had four clusters of 12 open learning zones opening onto small double height atrium spaces on the ground floor.

The current temporary head teacher (C2) is developing a much more formal approach to teaching, subject knowledge, departmental structure and discipline. His claim that students, teachers and parents disliked the open spaces was used to justify a retrofit.

> *'when we came here we were looking at some of the practices that were going on and we had open plan learning with no walls, groups of 60, cross curricular, mixed ability and it really wasn't working and the staff were on their knees and it was sort of a philosophy of education that was taken, in my view, it took a little bit from here and a*

little but from there and put it all in one big melting pot and the building was built with this in mind but educationally it was crazy to think that it would work in terms of the sound and what you were trying to do so we spent a lot of time looking at the data and talking to staff and children and the children were very clear, the first thing they said to us was we need walls in this school.

'You've got to think and accept that education is not going to change radically over the next 100 years so much so that you're not going to need classrooms anymore'

(Headteacher B2 interview)

The case was made to the Governing Body to borrow a large amount of money (£850,000 plus) from the Local Authority to build glass walls on the front of the open classrooms and to introduce partitions into the open areas within the mini-schools in order to reinstate cellular closed classrooms. The new retrofit is claimed to be much more popular with students, teachers and parents. In some cases these were the same families where siblings attended school A and reported high levels of satisfaction with learning in large open zones.

Members of staff felt that the new design had interrupted their established form of practice. The design presented them with challenges that they were ill prepared for.

'I had been in the old school for eight years and had to leave after 9mths in the new building. It was a disaster, I totally disagreed with the way we were being asked to teach in the open plan learning zones. The noise was horrendous and the students could not concentrate. I came straight back after the new head the new walls were built, the school works much better and the students are happier.' (Teacher interview)

Students reported acoustic challenges to their studies in the original design

> ‘‘*When we were in our lessons, like, where there were other classes next to us and there weren't no walls there was a lot of noise going around so it was hard to concentrate and everything'* (Y8 student interview)

The adaptation was not anticipated in the imagined practice and the architects were not involved in the retrofit exercise. The environmental conditions (acoustics, ventilation and temperature) in the retrofit have created or allowed new forms of problem for teachers and students.

> "*It's worse now, because it was that open and everyone's around they didn't want to shout as much but when it's closed no-one can hear them from outside"* (Y8 student interview)

> "*Not that the teachers didn't shout before, it's just that they were holding back because it was an open area. Now they shout louder, like more harsh and they're really strict*" (Y8 student interview)

The retrofit was not undertaken by the original architects and concerns were voiced about the efficiency of heating and ventilation systems in the new configuration. Students reported that they had felt claustrophobic due to a 'lack of air' and they also described a desire for spaces that are less cramped:

> *"I hate the closed classrooms, they are so hot, I feel like I can't breathe sometimes. I wish you could spread yourself out and everything rather than being in a cramped space"* (Y8 student interview)

> *"It's better like in more of an open space like the heart space because there's much more room to work in. The glass walls make the classrooms a lot more cramped when we're all together, it's really hot and hard to concentrate."* (Y8 student interview)

The lack of preparation for participation in new forms of practice envisaged in the design resulted in the design being understood as an unwelcome imposition that was resisted or dismissed. The solution to this disaffection with the design resulted in a new design that carried with challenges with it.

School D

In school D, there was little involvement of the original headteacher D1 in the vision, design and construction phases. A deputy headteacher represented the school's views. The data from our interviews showed that the BSF procurement process produced problematic conflicts and discontinuity for the educational considerations of the proposed design. After the design and delivery team was selected for the construction contract, the educational vision was no longer a key priority in the development of the project for the design team. Whilst it was apparent the school community felt fully involved in the development of the educational vision and conceptual design, the subsequent detailed design and build process actively disengaged the end users from the design team of the final build.

During the design and planning stage significant concerns were reported from the school community and the design team. The acoustic engineer raised major concerns about whether the design of open-plan learning models would function effectively but the contractors were driven by motives to secure the contract. When the contract was won, the contractors were under commercial pressures to deliver the school within a tight budget and programme. Key decisions were made at this stage to cut costs that impacted on the quality and performance of the built design. The aims of the educational vision were significantly compromised and the built design have low quality acoustic and environmental services specification which are not fit for the purposes of the imagined practice.

The current headteacher D2 has a strong focus on attainment and has been successful in improving standards. However the school is not managed in a way that aligns with the original educational vision. The timetable does not place same-year groups or subjects in the open learning areas with team teaching. The occupation of the building is now characterized by informal attempts by teachers to change the organisation of space. Teachers have moved old furniture in different ways to try and recreate the sense of single classroom spaces in all the open plan learning areas. This results in physically awkward spaces which are generally regarded by teachers and students as not fit for the purposes for which they are now used. They are particularly problematic acoustically and environmentally in terms of light, ventilation rates, air quality and temperature control.

The second occupation D2 was based on a pedagogic vision which was in stark contradiction to the imagined practice of the original design. In the absence of the substantial funding that would have been required to remodel the design, informal approaches to reconfiguring the spaces were invoked. These amplified the disaffection with the original design on the part of teachers. There was also no attempt to learn how to use the spaces as designed.

Students and teachers are very concerned of the significant environmental challenges. Design and practice are in direct conflict. Teachers have commented that using these informally adapted open classrooms disrupts and add tensions to their daily teaching practice.

> *'I teach with my back to the other open classroom, I absorb anything that is going on there noise-wise. I absorb it, and because it's hitting me first before it's hitting the students in my area, it does throws me when the other class is being disruptive and we can hear everything.'* (Y7 English teacher interview)

Another Y8 teacher uses a double space as her classroom. The open learning zones were designed to have two or three classes together but now it is just used for one class at a time.

'It only works when I don't have another class teaching in the other open space…having no doors and walls is a real problem' (Y8 Maths teacher interview)

She acknowledges that she has ownership of the space and greater flexibility by teaching in a bigger space that can be set up specifically to the way she wants to teach her class.

'I've just set it up the best I can but the furniture is not the best and difficult to move. Not many of us want to teach in the open plan spaces if I'm honest. My bargaining tool was that if I could have the entire space so I've been there ever since.' (Y8 Maths teacher interview)

'No walls and doors mean that when children from other classes come to get laptops there's a lot of distraction from them…particularly if I've got another class in the zone. There's four lots of distraction potentially. If students are sent out of neighbouring classrooms and teachers are talking to them then there's not a lot of privacy because my children can hear and see what's going on.' (Y8 English teacher interview)

Students also feel that the noise within these areas disrupts their learning.

> *'I don't really like the open plan because you can hear all this noise and it distracts you all the time.' (Y7 student interview)*

In this school there was a contradiction between design and practice. The voice of the original vision for the design disappeared with a change of leadership and there was no representation of the vision in the debates about practice in the school. Prolepsis from design to practice

failed. The design was not fit for the purposes for which it was being used and makeshift adaptations failed and in some cases compounded the difficulties experienced by staff and students alike.

School E

The headteacher and teachers at this school worked together to establish a pedagogic vision for their new school building. This strengthened the sense of community in the school. This is a school where many ex-pupils return to teach and there are very good community relations. Students report that they feel very safe and secure within the school.

However after they had completed the design process the budget for the construction was cut by central government. The staff had prepared themselves for a new way of working which without an appropriately designed building was almost impossible to put into practice.

The current building, which is in a very bad state of repair, constrains their practice and frustrates their intentions. Their ideal design did not involve large open spaces but insisted open classrooms which were flexible enough to allow for active group work and the use of breakout spaces with a classroom based model of personalised practice

> *'We were really adamant that we didn't want enormous spaces, so that when we were listening to the other schools, yes aesthetically they sounded amazing but we couldn't understand how these would function, particularly if you weren't going to drastically retrain your work force to deliver in these spaces'* (Headteacher interview).

> '*When the decision was made, that there was no money for the school to be re-built, there was also a change of leadership and I was promoted to deputy with the sole*

> *focus of improving pedagogy across the school and there has been a relentless focus on assessment, collaborative learning, engagement and what we tried to do was make lessons more dynamic and interactive, to demand so much more of our students and to encourage them to actually have extended conversations with each other and with members of staff. But a lot of these activities and a lot of that work requires decent spaces for students to move within and classrooms. I don't know if you have seen many of rooms but some of them are very old fashioned rooms and are very small spaces'* (Headteacher interview)

Students also recognised that some of the rooms could be bigger or more air conditioned, but they also commented that their classroom spaces were lovely to work in and they feel safe and comfortable learning in these areas.

> *I get pleasure from what it is the students and staff do in spite of the spaces and I know there very frustrated about lack of room and lack of access etc.* (Headteacher interview)

Interestingly staff and students speak very strongly about the sense of community fostered at this school, within which staff and students regard each other as kind.

In this school the seeds of a vision of the design of new spaces for learning were evident. Unfortunately the funding was not available for the construction. Their current practices were restricted by the limitations of their current building.

Conclusions

At the outset of this paper we showed how policy in the early years of the 21st century aimed to transform pedagogic practice through the creation of new designs for school buildings. We argued that the notion of proleptic instruction, as inspired by the work of Vygotsky and

developed by Cole, can be used to theorise the ways in which visions of new practice can be understood in terms of their transformation of the future. In this study we have shown how when the conditions of proleptic instruction are not realised that visions for the future fail to transform practices of the future.

We have shown that if design and practice are in alignment then design offers a range of affordances, it invites transformation. If design and practice are in direct conflict then practitioners experience significant challenges resulting in dissatisfaction and, at times, discomfort.

The structuring of future practice requires a process of learning with the voice of the vision of that transformation. The alignment between the imagined future and the actions of practitioners requires both the artefacts of the future (buildings) and the voices of their proponents. Understood in this way design alone does not and cannot change practice. It is part of a complex process of transformation which in itself must be regarded and enacted as a pedagogic practice.

As we argued in our first paper it is as if there is a process of resignification at each point of cultural change in successive management regimes. This raises considerable challenges for the kinds of social and cultural transformation that were envisioned in BSF. If the process of prolepsis fails then the vision fails. If it succeeds it only does so whilst the imagination of the practices remains aligned with the vision. If changes in policy or pedagogic predilection of a new school leader drift away from the original vision then there will be a need for an effective form of adaptation. The original BSF policy documents voiced a concern for adaptation. In practice it appears to be both difficult to enact and often very expensive. This suggests that the notion of sustainability of a school design should place much more emphasis on the possibilities for resignification. Failure to do this can result in more dissatisfaction.

As the National Audit Office (2017, p.12) argues " to deliver value for money, the Department must make the best use of the capital funding it has available – by continuing to increase the use of data to inform its funding decisions and by creating places where it can demonstrate that they will have the greatest impact. This calls for a greater understanding of the relationships between design and educational practices and the impacts on experience of students and teachers.

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