Changing Schools: A study of primary secondary transfer using Vygotsky and Bernstein

Abstract

This paper is concerned with the influences that are brought to bear on the design of school buildings and the effects that the design of these buildings have on those who teach and learn in them. It also focuses on the ways in which design is altered in and through the practices of these occupants. We argue that there is a mutual shaping of design and practice in these schools.

We deploy the theory of socio-genesis developed by LS Vygotsky and the sociology of pedagogy developed by Basil Bernstein in order to study the consequences for students of different trajectories of transfer between different designs and pedagogic cultures of primary and secondary schools in England.

Our intention is to contribute to current debates about the effects of new school designs and the enduring concerns raised by difficulties that some students encounter in transitions between schools.

Introduction

This paper draws on sociologies of cultural transmission and socio-cultural psychology as it considers the relationship between design and practice and the impacts on students. The specific focus is on the transition between primary and secondary schooling in years 6 and 7 of the English system of schooling. This paper builds on previous studies published in this journal. In Daniels (1989) a study of wall displays as tacit relays of the structure of pedagogic practice suggested that the grammar of pedagogic practice of a school is both revealed and relayed indirectly by visual representations of significant texts. In Daniels (1995) it was argued that

differences in the structure of pedagogic practices constitute differences in contexts which are of semiotic significance.

In the study reported here we were concerned with school designs as explicit and tacit relays as students moved between different structures of pedagogic design and practice. We followed students from the end of year 6 in their primary schools through their transition into year 7 of their secondary schools. Our concern was the effects of continuities and discontinuities in these trajectories. Thus our focus was on the effects of change in the physical environment and pedagogic factors at the institutional level as experienced at the personal level by students.

Policy context

The secondary schools sample consisted of 9 schools built under the Building Schools for the Future Programme (BSF) or the Academies Programme (2003-2013) and 6 established older comparator schools.

The argument promoted in favour of this significant investment in new designs was couched in terms of transformation of learning and teaching along with enhanced participation, community involvement and engagement (DfES, 2002, Hargreaves, 2003). One of the major challenges of the AHRC funded[1] *Design Matters?* project was to develop an understanding of the Design / Practice relationship. The challenge was to theorise the transitions between different sites of design and practice in such a way that structural elements of difference could be examined as they influenced personal experience.

Theoretical framework

In this instance we draw on the theoretical developments which have influenced and developed the work of the British sociologist Basil Bernstein and the Russian social theorist Lev Vygotsky. We do so because we are concerned with interactional, mediated practices and the

[1] AHRC AH/J011924/1 *Design Matters? The effects of newly designed schools on their users*

institutions in which they are enacted. Vygotsky proposed a dialectical conception of the relations between the personal and the social. Clearly schooling constitutes a form of collective social activity with specific forms of interpersonal communication. Furthermore within schools and between schools there are differences in the content, structure and function of interpersonal communication. However, a good deal of the post-Vygotskian research conducted in the West has focused exclusively on the effects of interaction at the interpersonal level, with insufficient attention paid to the interrelations between interpersonal and socio-cultural levels. Additionally, and perhaps as a consequence of this, schooling is often thought of as a generic activity, as if it were a social institution which is uniform in its psychological effects.

> In this (Vygotskian) approach it is quite possible to regard the school itself as a 'message' that is, a fundamental factor of education, because, as an institution and quite apart from the content of its teaching, it implies a certain **structuring of time and space** and is **based on a system of social relations**. (Ivic, 1989, p. 434)

Artefacts, such as school designs, are products of human activity that serve to bring together the cultural historical, the institutional and the personal levels. Cole (1998) argues that artefacts not only change our conditions of existence, but act on us and cause change in our mental condition as in Luria (1928 , p. 493). XXXXXX Following Vygotsky (1987), he argued that interpersonal processes are transformed into intrapersonal processes as development progresses and that there is a mutual shaping of person and context.

> These units of analysis therefore integrate the micro-social socio contexts of interaction with the broader social, cultural and historical contexts that encompass them. (Tudge & Winterhoff, 1993, p. 67)

Abreu & Elbers (2005:4) further argue that in order to understand social mediation it is necessary to take into account ways in which the practices of a community are structured by their institutional context. The mutual shaping of person and place is recognised 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 Vygotskian analysis of school architecture as a structuring resource (Flygt, 2009). Accordingly we investigated the ways in which the design of space within schools mediates and shapes practices of teaching and learning. 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. Bernstein provides a semiotic account of cultural transmission which is avowedly sociological in its conception. In turn the psychological account that has developed in the wake of Vygotsky's writing offers a model of aspects of the social formation of mind which is underdeveloped in Bernstein's work.

We also recognised the importance of developing an approach to the analysis and description of our research sites that could be used to monitor changes that took place over the course of our

study. These understandings formed the background to the development of an account of institutional structures as cultural historical products (artefacts), which play a part in implicit (Werstch 2007) or invisible (Bernstein 2000) mediation.

There was a need to refine a language of description that would allow our research to 'see' institutions as they did their tacit psychological work through the discursive practices that they shaped. A way of describing what were essentially the pedagogic modalities of the settings in which we were intervening was required. That is, the most likely forms of institutional practice that would be sustained in those settings. These mediate social relations and shape both thinking and feeling: the 'what' and 'how' as well the 'why' and 'where to' of practice. We were concerned with the ways in which wider social structures impact on the interactions between the participants.

In his analysis and thus his descriptions of schools, Bernstein (1977) focuses upon two levels in his account of cultural transmission; a structural level and an interactional level. The key concept at the structural level is the concept of boundary, and structures are distinguished in terms of their category relations. The interactional level refers to the pedagogic context and the social relations of the classroom or its equivalent. Power is spoken of in terms of classification which is manifested in category relations. Control is spoken of in terms of framing which is manifested in pedagogic communication. Framing, therefore, refers to relations within (within boundaries). It is through interaction (framing) that boundaries between discourses, spaces and subjects are defined, maintained and changed.
In our study we have taken this work as a point of departure in the development of a model of description. Where the theory of instruction gives rise to a strong classification and strong framing of the pedagogic practice the spaces used for instruction would be expected to be strongly demarcated. Single cell classrooms designed for single classes of students would be expected. The relatively strong control on the pupils' learning, itself, acts as a means of maintaining order in the context in which the learning takes place. The form of the instructional discourse contains regulative functions. With strong classification and framing the social relations between teachers and pupils will be more asymmetrical, that is, more clearly hierarchical. As in Hoadley's (2006) study there would be an expectation that the teacher would occupy space at the front of such classrooms. In this instance the regulative discourse of social order, relation and identuty and its practice is more explicit and distinguishable from the instructional discourse. Where the theory of instruction gives rise to a

weak classification and weak framing of the practice then children will be encouraged to be active in the classroom, to undertake enquiries and perhaps to work in groups at their own pace. In this version of a personalised approach curriculum subjects may be abandoned in favour of themes to be explored through project based enquiry. A mixed economy of spaces with large open areas and smaller breakout spaces for small group or individual study would facilitate this form of pedagogic practice. Here the relations between teacher and pupils will have the appearance of being more symmetrical. Teachers would be unlikely to retain 'ownership' of particular spaces. In these circumstances it is difficult to separate instructional discourse from regulative discourse as these are mutually embedded.

Hoadley (2006) provides an example of the application of Bernstein's work to the study of space in traditional schools in South Africa. She refers to teacher–learner spaces (strength of demarcation between spaces used by teachers and learners) and space for learning (strength of boundary between space, internal and external, to the classroom and learning). In this we are concerned with overall school design and this involves a much broader conception of space and innovation in school design. We were also concerned with the progressive recontextualisation of the design through subsequent occupations of the school as new leaders (headteachers) were appointed.

Singh (1993) noted the lack of attention to notions of attachment in Bernstein's work. There have been recent attempts to develop socio-cultural-spatial analyses of education and emotion (e.g. Kenway and Youdell, 2011). Our concern has been to progress the development of an account of the personal effects of schools design on groups and individuals as they move through time and between spaces. We were particularly concerned with personal aspects of social belonging and connectedness. 'School connectedness' is a concept that has been used in a variety of ways as an attempt to identify the psychological 'fit' of students to the school environment, encompassing elements such as health, security, social relations and self-esteem (Goodenow, 1993).

Numerous studies have tried to establish the connection between school physical environments and students' feeling of social belonging and connectedness (e.g. Konu et al., 2002; Smith and Sandhu, 2004; Rowe, Stewart and Patterson; 2007). Water, Cross and Shaw's (2010) identified the presence of graffiti in the school as a major influence impact on students' connectedness, especially when the student is in their first year in a new school. Dillon, Vesala and Suero Montero (2015) report a comparative study in a Finnish school and a British

school of the ‘space meanings’ and ‘space attachments’ made by 10–11-year-olds and argued that cultural factors could be evidenced.

We suggest that processes of co-creation of individual / psychological (connectedness) and cultural / historical (classification and framing) factors become interwoven. From Bernstein (2000) we develop an account of the regulation of these discourses and practices as institutional modalities (or most typical forms).

Methodology

In the wider *Design Matters?* project we used Bernstein’s work to develop an approach to the analysis and description of the schools as modalities of institutional practice which was used in the subsequent analysis of data concerning experiences of occupation as the designs were transformed under different theories of instruction as promoted by successive headteachers. In so doing it examines the relationships between the structuring of space in a building, the structuring of social relations and practices and the psychological consequences for occupants of the building.

As shown in figure 1 we collected user perceptions during each occupational change understood in terms of the appointment of a new headteacher.

Insert Figure 1 here

Student level data

In this paper we only report the data concerning practice as enacted at the times at which the students made their transition from primary school. One of the several approaches to gathering user perceptions was to survey student responses to a school connectedness survey. The instrument we employed was modified slightly from that developed by Goodenow (1993) which has a high internal validity (Cronbach’s Alpha 0.88). Goodenow devised the scale for

use with 12-18 year olds, whereas the *Design Matters?* team used it with 11-13 year-olds. A trial resulted in a slight reduction of the number of items, where we felt there was some degree of confusion among students about what an item meant. The questionnaire is reproduced in Appendix 1.

School and student level data were gathered during the final term of year 6 (time 1, n=452) in the primary schools and the first (time 2, n=498) and third terms of year 7 (time 3 n=415) in the secondary schools. The primary schools acted as feeder schools for both new build and established schools in each locality. The data were collated in such a way that, where possible, the student level data could be analysed as a collection of individual trajectories from school to school.

School level data

The general model of description of the institutional modality of the schools was developed under the headings:-

- School Design,
- Pedagogic Practice as Enacted in the Design, and
- External Relations as Enacted in the Design.

School Design was understood in terms of an 'instructional element' in which the classification of space was modelled as a design and subsequently remodelled in practice. This classification of space was associated with a measure of framing. The regulative aspect of this discourse was concerned the explicit (positional) or implicit (personal) regulation of the general social order through the building.

The Pedagogic Practice as Enacted in the Design was also analysed in terms of classification (the organisation of teaching for curriculum subjects and grouping of students (numbers of students in a teaching unit e.g. traditional class of 30+ or multi unit of 90 or 120) and framing of the practice (the extent to which the practice was personalised in terms of curriculum selection, sequencing and criteria of evaluation). The regulative aspect of this part of the part referred to the extent to which the social order, identity and relation in the teaching space was the object of implicit or explicit control.

The External Relations as Enacted in the Design aspect of the model referred to the degree of insulation between the school and community (classification) and the degree of control over the internal / external relation.

In the coding instrument, the high-level concepts of classification and framing were translated into a coding scheme to read the data. The indicators, or theoretical constructs, named empirical instances of particular abstract concepts. The coding was performed using a four level scale where ++ represents strongest and -- represents weakest. The scale was ++, +, -, -- and applied to values of classification (C) and framing (F). Clearly there were no absolute measures which applied. The purpose was to use descriptions which would demarcate the schools from one another and draw attention to important characteristics.

The coding of each school in terms of specific classification (strength of category relation) and framing (social relation) values was based upon. For each school we developed descriptions observation and interview data based on the model which incorporate the data gathered from the wide variety of sources. This allowed us to consider the extent to which the original design was witnessed in practice at each occupation of the school by consecutive headteachers. We were also able to reflect on the relationship between the accounts of practice that were gathered and

observations of practice that we made.

Each school was visited at least six times and interviews were conducted with headteachers, teachers and students. In secondary schools facilities managers and parents were also interviewed both individually and in focus groups. Teaching areas were observed as was the use of space at break and lunch time. A tour of the school was conducted with the architects involved in the design of the building. In another paper we will report the detail of the codings for each of the aspect of the model. Table 1 provides examples of elements of the coding frame.

Insert Table 1 here

Two broad groupings of data emerged from this extended qualitative analysis. Each grouping was quite broad nevertheless there was a clear distinction between the two modalities. We were particularly interested in settings in which the regulation of the practice envisioned in the school design was over ridden or subverted by the pedagogic practice as enacted.

In Modality A, the instructional element of School Design the classification of space was seen to be strongly classified with strong framing. The regulative aspect of this discourse was concerned the explicit (positional) regulation of the general social order through the building. Pedagogic Practice as Enacted in the Design the classification of space was also strong and the framing of the practice in terms of curriculum selection, sequencing and criteria of evaluation was also strong. The regulative aspect was based on explicit control of social order, identity and relation in the teaching space. The External Relations as Enacted in the Design revealed strong insulation between the school and community and strong control over the internal / external relation.

In Modality B the School Design was weakly classified with a mixed economy of very large open spaces and smaller enclosed spaces as promoted under the BSF guidance (DfES, 2002). It was also weakly framed in line with the personalisation argument in which students were supposed to exercise control of the selection, sequencing and pacing of their studies within a thematic approach to the curriculum. However, we found several examples of this modality which were subsequently adapted as the modality of pedagogic practice changed through time and with subsequent changes of leadership. Details of these adaptations are the focus of another paper (Author/s *et al* XXXXd). The regulative aspect of Modality B was concerned with the implicit (personal) regulation of the general social order through the building.

The Pedagogic Practice as Enacted in the Design of Modality was aligned with features outlined in the Modality B design. However, there were several examples of practices of attempts at strengthening classification through the building or improvisation of barriers or walls in the open spaces in order to enact a modality a practice. In these cases the modality of the design was clearly not aligned with the modality of the practice. In the regulative aspect of Modality B the social order, identity and relation in the teaching space was the object of implicit control. Again this aspect was subject to adaptation over time.

The External Relations as Enacted in the Design of Modality B involved weak insulation between the school and community and the lower control over the internal / external relation as envisioned the BSF agenda (DfES, 2002). In one of the schools we observed a change from a situation where parents were encouraged into the school at all times and offered free breakfast in order to encourage communication with staff and students to the introduction of a rule that parents were not allowed on the school site.

Taken together we were able to analyse the connectedness data in terms of transition between modalities over time and the implications of settings in which modalities of design were not aligned with modalities of practice.

Insert Figure 1 here

Insert Figure 2 here

Insert Figure 3 here

Insert Figure 4 here

Insert Figure 5 here

Insert Figure 6 here

Findings

We used a modified connectedness scale (see Appendix 1) of 11 Likert scale items also with high internal consistency (Cronbach's Alpha = .85). A final factor analysis confirmed uni-dimensionality of the scale we used. High scores are more frequent than low scores (i.e. the distributions are negatively skewed).

Overall, school connectedness by measurement occasion

Overall, school connectedness scores significantly decreased over time. This is consistent with findings reported in current literature on longitudinal studies (Niehaus et al., 2016, 2012). By comparing scores between consecutive time points using independent t-tests see see Figure 2), on average, student showed higher scores in Time 1 (M = 4.12, SE = 0.03) than in Time 2 (M = 3.90, SE = 0.03), $t(424) = 6.42$, $p < .001$. Scores in Time 2, in turn, were significantly higher than scores in Time 3 (M = 3.54, SE = 0.03), $t(406) = 14.75$, $p < .001$. In terms of effect sizes,

the overall decrease in school connectedness scores from Time 1 to Time 2 represents a medium effect (r = .30) while the decrease from Time 2 to Time 3 represents a large effect (r = .59). When evidence was collated it was found that there was on average a 7.7% decline in school connectedness, this was consistent across races and genders (Niehaus et al. 2012)

Insert Figure 7 here

School level analysis

When examined at the school level, schools' mean connectedness trajectories show considerable variation as shown in Figure 3 below. Amixed analysis of variance showed that here was a significant main effect of time, $F(2, 784)= 151.26$, $p < 0.001$, a significant main effect of school $F(14, 392) = 16.83$, $p < 0.001$ and a significant interaction effect between time and school, $F(28, 784) = 59.33$, $p < 0.001$.

Insert figure 8 here

New/Established Comparator Schools Analysis

We then compared the school connectedness scores of new and established comparator schools at each of the time points measured using independent t-tests and found that only in Time 2 school connectedness scores of new schools (M = 3.95, SE = 0.03) and established comparator schools (M = 3.58, SE = 0.07) differed significantly $t(496) = -4.75$, $p < .001$. In terms of effect size, this difference represents a small to medium effect (r = .21). Neither in Time 1 nor in Time 3 were the school connectedness scores of new and established comparator schools significantly different. These comparisons are presented in Figure 9.

Insert Figure 9 here

Modality Analysis

In order to assess whether the different modality groups show significantly different school connectedness scores at each of the time points, we performed one-way analysis of variance. We found a significant effect of modality group on school connectedness levels at Time 1 ($F(3,374) = 48.02$, $p < .001$, $r = .62$), Time 2 ($F(3,358) = 205.57$, $p < .001$, $r = 1.31$) and Time 3 ($F(3,349) = 129.58$, $p < .001$, $r = 1.06$). The effect sizes of these differences are large.
To assess the extent to which the mean school connectedness score trajectories over time differed between school modalities, we conducted a mixed analysis of variance (ANOVA). We found a significant main effect of modality ($F(3,342) = 100.00$, $p < .001$), a significant main effect of time ($F(2,684) = 211.86$, $p < .001$), and a significant interaction effect between modality and time ($F(6,684) = 112.96$, $p < .001$), which means that the different modality groups progressed differently over time. Figure 5 shows that while modalities A-A and B-A share similar school connectedness trajectories, with scores steadily decreasing from Time 1 to T 3. Modality B-B starts at a similar school connectedness level but increases in Time 2 and declines somewhat in Time 3. Modality A-B, in turn, starts lower than the rest of modality groups but then increases significantly in Time 2 and scores remain comparatively high in Time 3.

Insert Figure 10 here

Individual experiences of transition

In order to gain a sense of how the various data sources contributed to an understanding of individual children's evolving experiences, a number of micro-case studies were extracted from the data. Jane'S story is illustrative of a child who moved from a highly controlled Modality A primary school into a Modality B secondary environment.

Jane*: modality A to modality B (Student's name has been changed)*

Data collected from JANE's year group at the end of year 6 suggests CP1 Junior School was very strict and authoritarian. There was a very hierarchical management structure with strong boundaries between the head teacher, the teachers and the students. The students refer to a lack of attention to their personal and emotional needs. The regulative discourse and practice of the school was directed towards functional aspects of behaviour. For example, this was witnessed in a series of highly directional posters displayed around the school. Most notably a number featured a picture of a dog with suggestions that students should obey commands (such as to sit down) in much the same way as a well trained dog would do on command.

Before Jane moved to secondary school, she was interviewed about her expectations and concerns. She expressed concerns about changes in instruction and regulation:

> "Because when you get used to a teacher at this school they're going to be more different and you've got new rules that you've got to get used to and they're gonna set new things out and there's gonna be lots of different teachers".

When speaking about the rules of the secondary school she said she expected them to be "stricter and more precise". She referenced navigating the new school – "It's going to be a hard way to get around the school because you're really not going to know where you're going to go" – she later compared the two aspects – "Some people struggle with open spaces but I think that different teachers is more important than having open spaces because if there's an open space it just gives you more room but a different teacher is more of a serious matter".

After Jane's first week of school, she was asked to write an essay entitled 'my first week at school'. In her essay, Jane talks about her fears with regards to social relations:

> "Would the older pupils hate me? Would they push me around?... I looked around me and saw so many pupils. There were girls and boys, short and tall ones and many more. I felt so small."

She primarily focuses on the social aspects of her transition to secondary school. "I had so many worries going through my head, but tried hard to push them away with good thoughts, new friends, new teachers and more to learn as well."

At the end of the essay, she refers to being happy in her lessons and feeling settled after only one week. In discussion with peers, she described the strong control and strict discipline of her primary school:

> "They sort of belittled you and treated you like you was four".

She goes on to explain that she prefers her secondary school:

> "Some of the teachers didn't like you to have any fun. They just made you get your head down and do some work. But here they let you have a bit of fun."

Her favourite spaces in her new school were her form room, the drama studio and the library. She thinks learning in open spaces is:

> "ok but sometimes when there's older students in the other classroom it does get quite annoying when you're trying to work… Cause if they're in like ten/eleven they're shouting and all that so it gets really annoying after a while."

When JANE was nearing the end of her first year at secondary school, she suggested that the areas she liked learning in were primarily open-plan spaces and the areas she said she disliked learning in were closed classrooms. She mentioned feeling more at ease in open spaces and having the freedom to move. This provides an interesting contrast with her views opn entering secondary school when she complained that the open-plan spaces can be loud when shared with

another class. She acknowledged that there is a benefit of having a combination of open-plan and closed classrooms because some lessons are more suited to closed classrooms than open-plan, e.g. assessments.

Jane feels most observed in large open spaces because “teachers are usually on the balcony”, but she doesn’t mind this because “teachers can see if anything happens”. She suggested that this was one of the safest places in the school and one of her favourite places to be with friends. She also suggested that other open-plan social areas, such as the library, were the safest spaces in the school and her favourite places to be with friends, and that closed classrooms were the least safe and ‘cramped’ areas of the school as worst to be with friends.

In terms of the quantitative data, Jane’s transition to secondary school has been positive. Her mean school connectedness rose steadily from primary school to secondary, and only dropped slightly at Time 4 once she’d been in school over a year. This does not follow the usual pattern seen in school connectedness data where the child’s scores increase when they start secondary school, but drop significantly when the ‘wow factor’ of a new school wears off.

John: modality B to modality A (Student’s name has been changed)

Overall the discussion group of which John was a member in his final weeks in a Modality B primary school seemed to have none of the concerns held by pupils at Modality A primary schools. There was no mention of getting lost, no mention of bullying, and hardly any negative expectations.

In an essay written in the first week of secondary school, John mentions academic concerns :

> ‘I thought everything would be really hard and tiring and boring but surprisingly it isn’t, especially English and French. It’s really fun and awesome.’

He referred to spatial aspects of the school:

> ‘I really thought I was going to get lost every lesson but so far I have only got lost once in the whole week’ and ‘I am gobsmacked that I work in such a big school. I am not really used seeing loads of children and adults and moving class to class is

John participated in a second discussion group during his first weeks at secondary school. John hardly contributed to the discussion. John made several references to the way in which the school controls student movement very strongly.

John’s mean school connectedness is interesting as it follows the opposite trajectory to the overall average school transition. Usually, the school connectedness score increases at Time 2 and decreases at Time 3. John’s mean school connectedness decreases at Time 2 (from 3.45 to 3.18) then decreases further at Time 3 (to 4). Moreover, the particular items that decreased were ‘proud to be part of the school’ (from 4 to 3), ‘have time on my own’ (from 3 to 2), ‘easy to find way around’ (from 5 to 3) and – most dramatically – ‘able to be myself’ (from 5 to 2).

Discussion and Conclusion

Recent policy on school design promoted transformations of modalities of design and pedagogic practice. In the sample of schools that we studied, some of these transformations were maintained over time whilst others were repeatedly adapted, in sometimes vain attempts to recreate prior modalities of design and practice.

We used multiple sources of interview and observation data to populate a model of description based on Bernstein’s work. There was a very high degree of consistency over these multiple sources. We were also able to identify schools where the design vision was aligned with current practice and where the modality of current practice was in direct conflict with the modality of the school design. On the basis of these data, we were able to identify four types of trajectories between two modalities of primary schools and the modalities of secondary schools.

Our internally consistent adaptation of the school connectedness scale showed the decrease over time that is characteristic of this measure (Niehaus et al. 2012). However, when the contrast between the new build schools and established comparator schools was examined the decrease in the new build schools were significantly less in time point 2 at the beginning of secondary school (see figure 4) although there was no significant difference by the end of the first year at secondary school. When we discussed this finding in schools, teachers spoke of a 'wow' effect that they felt 'wore' off over a short period time. Some schools went to considerable effort to maintain this 'wow' effect as long as possible through such measures as constant repainting of scuffed surfaces. A national comparative study of attainment in new build schools also showed a similar effect (Williams et al. 2015) There are strong claims for an improved behaviour effect in new build schools which we found support for in interviews with Headteachers (PWC, 2003)

> The behaviour has improved dramatically, the standards of teaching and learning, the standards of student behaviour, the standards of progress and attainment in our school over the last five years has shot up astronomically… '(Headteacher interview)

When the connectedness data were examined at the school level, we saw that changes in connectedness scores differed markedly over time between schools. The highly significant differences between trajectories (See Fig 5) that had an A type secondary school and those that had a B type secondary school were supported by extensive interview and observation data which will be reported in another paper (Author/s *et al*. XXXX). This was particularly marked in cases where students from B type primary schools moved to A type secondary schools.

However it was only when the data were examined over time between school modalities that significant group effects were observed. Additionally, comparisons between schools where practice was aligned with design and where practice was not aligned with design show highly

significant differences in the secondary school measures where there were no significant differences in the primary data.

In answer to our overriding question as to whether design matters, it seems that the relation between design and practice is what matters, as well as continuity in the experience of design. Moving between different forms of pedagogic practice that are aligned with design environments appears to have a marked effect on how connected students feel to their schools. It has long been well known that the transition between some homes and school on starting education is more difficult than those where continuity is evident (Douglas (1964) , Melhuish et al (2008), Bernstein (2000). The internal coherence of design and practice also seems to be important. Perhaps of more interest is the evidence we have obtained on the implications of moving from one modality of design and practice to another. It would seem when students move between different structures of pedagogic practice they are faced with specific challenges in adjusting to what may be thought of as new semiotic orders in which specific forms of competence are privileged. We have shown that this does matter.

Hundeide (1985) has shown, in a study of the tacit background of children's judgements, how participants in an activity, in part, create the setting. These 'taken for granted background expectancies' reflect in part the sociocultural experience that the individual brings to the situation.

> 'One needs a framework that takes into account the historical and cultural basis of individual minds: the collective institutionalized knowledge and routines, categorization of reality with its typifications, world view, normative expectations as to how people, situations, and the world are and should be, and so forth. All this is tacit knowledge that has its origin

> beyond the individual, and it is this sociocultural basis that forms the interpretive background of our individual minds.'
>
> Hundeide (1985) p.311

Bernstein's (1981) paper outlined a model for understanding the construction of pedagogic discourse. In this context pedagogic discourse is a source of psychological tools or cultural artefacts.

> 'Once attention is given to the regulation of the structure of pedagogic discourse, the social relations of its production and the various modes of its recontextualising as a practice, then perhaps we may be a little nearer to understanding the Vygotskian tool as a social and historical construction'.
>
> Bernstein (1993)

He also argues that much of the work that has followed in the wake of Vygotsky 'does not include in its description how the discourse itself is constituted and recontextualised'

> 'The socio-historical level of the theory is, in fact, the history of the biases of the culture with respect to its production, reproduction, modes of acquisition and their social relations.'
>
> Bernstein (1993) p. xviii

As Ratner (1997) notes, Vygotsky did not consider the ways in which concrete social systems bear on psychological functions. He discussed the general importance of language and schooling for psychological functioning, however he failed to examine the real social systems in which these activities occur and reflect. The social analysis is thus reduced to a semiotic analysis which overlooks the real world of social praxis (Ratner, 1997). Vygotsky's understanding of mediation

by psychological tools is, as it were, situated by the Bernsteinian understanding of the regulation, structuring and recontextualisation of the artefact. In this way a psychological understanding of the social formation of mind is extended through a sociological understanding of the origins of mediational means.

In a recent paper, Singh (2017) compares Foucault and Bernstein's ideas on governance. She suggests that new policies on school design are in effect new modes of pedagogic governance, and these modes of pedagogic governance are recontextualised in specific practices.

This project advances the development of the post occupancy evaluation of schools through the incorporation of perspectives drawn from Vygotsky's theory of sociogenesis and Bernstein's later work on cultural transmission. The paper has also shown how Bernstein's approach to the codification of modalities of pedagogic practice can be extended to incorporate a broader notion of the configuration of space in the design of a building and allows for the examination of the consequences of change over time.

We suggest that innovations in school design must be understood as relays of underlying arguments that may come into conflict with other pedagogic perspectives in the social world of schooling. The interplay between design and practice can ease or exacerbate the challenges of moving between schools.

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References

Abreu, G and Elbers, E. (2005) The social mediation of learning in multiethnic schools (introduction), *European Journal of Psychology of Education*, 20, 1: 3-11

Author/s (XXXXa) *British Journal of Sociology of Education*

Author/s (XXXXb) *British Journal of Sociology of Education*

Author/s (XXXXc) *British Journal of Sociology of Education*

Author/s *et al* (XXXXd)

Author/s *et al* (XXXXe)

Bulut Ozsezer, M. S., & Iflazoglu Saban, A. (2017). An Investigation of Teacher Candidates' Perceptions about Physical Dimension of Classroom Management. European Journal of Educational Research, 6(2), 199-212.

Barrett, P., & Zhang, Y. (2012). Teachers' views on the designs of their primary schools. Intelligent Buildings International, 4(2), 89-110.

Barrett, P., Barrett, L., & Zhang, Y. (2016). Teachers' views of their primary school classrooms. Intelligent Buildings International, 8(3), 176-191.

Barrett, P., Zhang, Y., & Barrett, L. (2011). A Child's eye view of primary school built environments. *Intelligent Buildings International*, *3*(2), 107-123.

Benito, A.E. (2003). The school in the city: school architecture as discourse and as text. *Pedagogica Historica*, *39* no 1-2

Bernstein, B. (2001). From pedagogies to knowledges. In A. Morais, I. Neves, B. Davies & H. Daniels (Eds.), *Towards a sociology of pedagogy: The contribution of Basil Bernstein to research*. New York: Peter Lang

Bernstein, B. (2000) *Pedagogy, Symbolic Control and Identity*. Rowman and Littlefield

Bernstein, B. (1993) Foreword in H. Daniels (ed.) (1993) *Charting the agenda: Educational activity after Vygotsky*, London: Routledge

Bernstein, B. (1990) *Class, codes and control, vol. 4: the structuring of pedagogic discourse*. London, Routledge

Bernstein, B. (1985) On pedagogic discourse, in J. Richards (ed.) *Handbook of Theory and Research for the Sociology of Education*. Greenwood Press: New York

Bernstein, B. (1981). Codes, modalities and the process of cultural reproduction: A model. *Language and Society*, 10, 327-363

Bernstein, B. (1977) *Class, codes and control, vol. 3*. London: Routledge & Kegan Paul

Burke, C. (2010). About looking: vision, transformation and the education of the eye in discourses of school renewal past and present, *British Educational Research Journal*, 36,1: 65-82

Carvalho, L., & Dong, A. (2006). Legitimating design: a sociology of knowledge account of the field. *Design Studies*, 30, 5: 483-502

Department for Education and Skills (2002) BB 95 *Schools for the future - designs for learning communities.*

Dillon, P., Vesala, P., & Suero Montero, C. (2015). Young people's engagement with their school grounds expressed through colour, symbol and lexical associations: a Finnish–British comparative study. Children's Geographies, 13(5), 518-536.

Douglas, J. W. (1964). *The home and the school: a study of ability and attainment in the primary school*. MacGibbon and Kee: London

Flygt, E. (2009) Investigating Architectural Quality Theories for School Evaluation: A Critical Review of Evaluation Instruments in Sweden, *Educational Management Administration and Leadership*, 37, 5: 645-666

Fitz, J. (2007) Review essay: Knowledge, power and educational reform, applying the sociology of Basil Bernstein. *British Journal of Sociology of Education*, 28(2), 273–279.

Goodenow, C. (1993). The psychological sense of school membership among adolescents: Scale development and educational correlates. *Psychology in the Schools*, 30, 79–90

Guili, V., O. Da Pos, and M. De Carli. 2012. “Indoor Environmental Quality and Pupil perception in Italian Schools.” Building and Environment 56: 335–345.

Gillen, A., Wright, A., & Spink, L. (2011). Student's perceptions of a positive climate for learning: A case study. Educational Psychology in Practice, 27(1), 65-82.

Hargreaves, D. (2003) *Education Epidemic: Transforming secondary schools through innovation networks*. DEMOS

Hasan, R. (2002) *Semiotic mediation, language and society: Three exotropic theories – Vygotsky, Halliday and Bernstein*. Presentation to the Second International Basil Bernstein Symposium: Knowledge, pedagogy and society. Cape Town, July 2002

Hoadley, U. (2006) Analysing pedagogy: the problem of framing. Accessed from http://www.education.uct.ac.za/sites/default/files/image_tool/images/104/hoadley2006.pdf

Hundeide, K. (1985) The Tacit Background of Children's Judgments, in J. Wertsch (Ed) *Culture, Communication and Cognition*, Cambridge: Cambridge University Press.

Kenway, J., and Youdell, D. (2011) The emotional geographies of education: Beginning a conversation, *Emotion, Space and Society*, 4:3, 131–136

Melhuish, E. C., Phan, M. B., Sylva, K., Sammons, P., Siraj-Blatchford, I., & Taggart, B. (2008). Effects of the home learning environment and preschool center experience upon literacy and numeracy development in early primary school. *Journal of Social Issues*, 64(1), 95-114

Moos, R. H. (1979). *Evaluating Educational Environments: Procedures, Measures, Findings and Policy Implications*. San Francisco, CA: Jossey-Bass.

Niehaus, K. Moritz Rudasill, K. Rakes, C. (2012). A longitudinal study of school connectedness and academic outcomes across sixth grade. *Journal of School Psychology*, 50, 443-460. doi: 10.1026/j.jsp.2012.03.002

PricewaterhouseCoopers (2003) *Building Performance. An empirical assessment of the relationship between schools capital investment and pupil' performance.* DfES Research Report Series, RR242

Ratner, C. (1997) *Cultural Psychology and Qualitative Methodology. Theoretical and Empirical Considerations*, London: Plenum Press.

Schechtman, S., 2011. The Impact Of Students' Perceptions Of School Building Quality And Self-Concept On Academic Outcomes.

Singh, P. (2017) Pedagogic governance: theorising with/after Bernstein, *British Journal of Sociology of Education*, 38:2, 144-163

Singh, P. (1993) Institutional Discourse and Practice. A Case Study of the Social Construction of Technological Competence in the Primary Classroom, *British Journal of Sociology of Education*, 14:1, 39-58

Singh, P., Thomas, S. and Harris, J. (2013) Recontextualising policy discourses: a Bernsteinian perspective on policy interpretation, translation, enactment, *Journal of Education Policy*, 28:4, 465-480

Vesala, P., & Dillon, P. (2012). A Comparative Study of Student's Engagement with their School Grounds Through a Lexicon of Emotions. Procedia-Social and Behavioral Sciences, 45, 475

Vygotsky, L. S. (1987) The Collected Works of L.S. Vygotsky. Vol. 1: Problems of General Psychology, Including the Volume Thinking and Speech, eds R. W. Rieber and A. S. Carton, trans. N. Minick. New York: Plenum Press

Walkerdine, V. (1984). Developmental psychology and the child-centred pedagogy: the insertion of Piaget into early childhood education. In J. Henriques, W. Holloway, C. Urwin, C.Venn, & V. Walkerdine (Eds.) *Changing the subject*, (pp. 153-202). London: Methuen.

Walkerdine, V. (1989) *Counting Girls Out*, London, Virago

Waters, S., Cross, D., & Shaw, T. (2010). Does the nature of schools matter? An exploration of selected school ecology factors on adolescent perceptions of school connectedness. British Journal of Educational Psychology, 80(3), 381-402.

Wertsch, J. V. (1998) *Mind as Action*. Oxford University Press

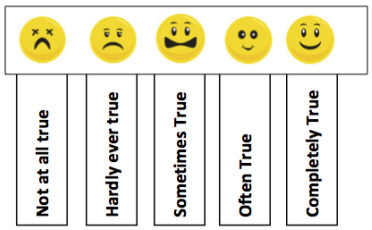
Williams, J.J., Hong, S.M., Mumovic, D. and Taylor, I. (2015) Using a unified school database to understand the effect of new school buildings on school performance in England. *Intelligent Buildings International*, 7: 2-3, 83-100

Appendix 1

The adapted School Connectedness Questionnaire

How do you feel about school?

These questions are about how you feel about school. Tick a box to show how true each statement is for you.



		Not at all true	Hardly ever true	Sometimes True	Often True	Completely True
1.	I feel like a real part of this school	☐	☐	☐	☐	☐
2.	People at this school are friendly to me	☐	☐	☐	☐	☐
3.	I am treated with as much respect as other students	☐	☐	☐	☐	☐
4.	I can really be myself at this school	☐	☐	☐	☐	☐
5.	The teachers here respect me	☐	☐	☐	☐	☐
6.	I feel proud of belonging to this school	☐	☐	☐	☐	☐
7.	I feel safe in this school during lessons	☐	☐	☐	☐	☐
8.	I feel safe in this school during break /Lunchtime	☐	☐	☐	☐	☐
9.	It is easy to find my way around this school	☐	☐	☐	☐	☐
10.	There are lots of places for me to be with my friends in this school	☐	☐	☐	☐	☐
11.	I can have time on my own in this school if I want to	☐	☐	☐	☐	☐