

Changed Learning Through Changed Space. When can a Participatory Approach to the Learning Environment Challenge Preconceptions and Alter Practice?

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Abstract

School premises make a difference to learning, but it is important to understand the relationship between setting and educational activities. Physical space has been found to entrench practice, making it harder to reflect and make changes. Yet changes made to the physical environment may not lead to changes in teaching or learning. This may be understood theoretically in terms of levels of participation, and many school design practitioners advocate active participation of school communities in the processes of change. This article considers two case studies of teachers and learners engaging with their physical school learning environment. The overview of responses and outcomes generated by these two studies enables the identification of central issues for effective participatory approaches to the learning environment.

Keywords

Environment; consultation; voice; teaching practice

Introduction

Background

While it is possible to ask whether the physical school environment makes a difference to learning (Durán-Narucki, 2008; Kumar *et al.*, 2008), it is important to recognise that this is not a simple, quantitative relationship, where better environments produce better learning. Historical examples, contradictory and inconclusive research evidence and contemporary experiences of school settings show that the relationship of education and physical environment is complex and interactive (e.g. Saint, 1987; Higgins *et al.*, 2005; Weinstein, 1979; Gislason, 2010). The particular school environment is part of a wider, dynamic web of cultural and social aspects within which the environment needs to be appropriate to the intended teaching and learning undertaken in the setting. Gislason urges closer investigation of schools to suggest 'how these elements [school space, organisation and culture] can be aligned to ensure a positive learning environment' (Gislason, 2010: 145) and this complex inter-relationship suggests the necessity of adaptation and changes to practices and to settings.

Yet much research in education shows that there is a conservatism of practice that tends to work against even reflexive practitioners making changes to their physical space and teaching (for example, Elliott, 1991; Galton *et al.*, 1999). It is possible to identify two aspects to this conservatism. Firstly, there is the community of practice of teaching. Educators are encultured into a community of practice that is entrenched and both difficult to recognise and challenge (Pointon & Kershner, 2000): it is not usually made explicit in initial teacher training, for example (Alexander, 2004; Brehony, 2005; Moyles, 2005).

Secondly, within this community of unspoken assumptions, it is possible for individual teachers to espouse particular models of teaching and learning while behaving in ways that support very different conceptions. For example, Pollard reflected on the contrast between British primary teachers' supposed enthusiasm for changed methods during the 1970s and their relatively unchanged practice (Pollard, 1985). He comments that: 'progressive primary school philosophy was articulated by the

Plowden Report which appeared to have considerable influence on teachers....However, that the reality of actual practice was much more cautious was shown by a number of studies' (Pollard, 1985: 19). Cuban has demonstrated similar mismatches between reforming intentions and classroom practice during the 1920s and 1960s in the US (Cuban, 1993). More recently Smith *et al.* (2004) reported that teachers in the UK over-estimated the extent to which they had changed their practice to enable more whole class interactive teaching, as demanded by government strategies. These two aspects of teacher conservatism are particularly apparent in circumstances where changes are imposed 'top-down' and are not necessarily carried through; perhaps if changes are developed 'bottom-up' through reflexive practice, it is more likely that teachers recognise that change is both possible and desirable.

It is also clear that the design of school premises or the use made of spaces within the school can entrench practice. For example, it can be argued that a tendency towards pedagogical reform in German schools in the 1920s was held back by the existence of a stock of old-fashioned schools (Becker, 1966). Although the effect of such buildings on individual teachers and students might be complex and varied, it is reasonable to hypothesise that, overall, the buildings prevented change from gathering pace since they provided a backdrop against which teachers, administrators and policy makers could continue as before. Considering the impact of a narrower detail of classroom organization, a number of educationalists have commented on the continued common practice of most UK primary schools in arranging desks to form tables (Turner-Bisset, 2003; Galton et al, 1999). This classroom arrangement developed in response to individualized learning and child-centred approaches popular in the 1960s and 1970s, but continues to be used, with some awkwardness, in classrooms where interactive whole-class teaching is now favoured (Smith *et al.*, 2004; DfES, 2006). Even when group work is used, and this table arrangement seems more appropriate, McNamara and Waugh comment that 'group size often seems to be determined by the furniture and its arrangement' rather than by 'educational or pedagogical considerations' (1993: 44). Similarly, in secondary schools, research demonstrated that traditional didactic classroom settings are associated with didactic teaching methods (Horne-Martin, 2002). Arguing that teachers frequently do not feel empowered to change their classroom spaces, Horne Martin urges professional development to develop educators' awareness of the learning environment (Horne-Martin, 2006).

While such examples demonstrate how aspects of an existing learning environment may encourage unreflective continuities of educational practice, it has also been shown that changing the physical setting does not necessarily lead to changes in practice (Woolner *et al.* 2007b). As open-plan designs for schools became more common in the 1970s, there developed a considerable body of research, from the UK and USA, which examined how such schools are used. A major conclusion is that the design does not determine the teacher's practice, with wide variations in how open-plan space is used (Gump, 1975; Rivlin and Rothenberg, 1976; McMillan, 1983). For example, studying schools in the US, Rivlin and Rothenberg (1976) found that despite being encouraged by the policies of the school and the layout of the classroom to be more flexible and less traditional, many of the teachers they studied stayed in one place, essentially 'taught from the front' and did not move the furniture. In the UK, an appraisal in 1972 of a recently built open-plan primary school warned of the difficulties of 'trying to use the design of the building to "force teachers to work in an open, cooperative situation all the time"' (Maclure, 1985: 135). Bennett *et al.* (1980) include a case study of a comparison of practice in two identically designed units in two UK schools, containing the same number of pupils, with dramatically different teaching styles and organization. They argue that 'expertise and philosophy of the staff are the central determinants, not the design of the building' (1980: 222).

Thus, it is possible for the setting for learning to remain forgotten and static, holding back pedagogical innovations, or, in contrast, for physical innovation to be enacted but ignored and so fail to influence teaching and learning practices. This mirrors the two aspects of conservatism of practice, which have been identified by research in education: on the one hand, the unexamined culture of the educators' community of practice which resists change and, on the other, the tendency for change in teachers' ideas to have little influence on their practice. I don't understand this part of the sentence

Objectives

Alongside this understanding of how change may not occur, however, there is clearly the potential for understanding and changing the physical environment of a school or classroom to act as a catalyst in processes of improving education (Flutter, 2006; Maxwell, 2000; Parnell *et al.*, 2008). Examples of

such a positive cycle in practice are described in a recent study of two US school, which are successful despite the social challenges associated with their student intakes. The researchers identify 'a sense of collective commitment to the place and its purposes' (Uline et al., 2009: 420), seen in engagement with the school environment such that 'Teachers, leaders, parents and custodians actively challenged existing spatial routines through re-conceptions of classroom arrangements, enhancements to entryways, changes in paths of movement...and modifications in cafeteria seating and lighting' (Uline et al., 2009: 418). The challenge, therefore, for research in this area is to understand how a focus on the physical setting for learning can facilitate reflection on existing practices and support sustainable change in the design and use of school spaces.

Theoretical framework

We took a general social constructivist view of the data which involved trying to understand how people interpret their worlds: to understand the particular cultural worlds children and adults inhabit and which they construct and actively try to make sense of (Vygotsky, 1978). Thus, the focus is on the interaction between the curriculum, learner and teacher and their socio-historical context. These interactions are, however, effected in a physical space. According to Gibson (Gibson, 1977) affordances are all the "action possibilities" latent in the environment, objectively measurable and independent of the individual's ability to recognize them, but always in relation to the actor and therefore dependent on their capabilities. Environmental psychologists have applied this concept of 'affordances' to understand and assess children's environments (see e.g. Clark & Uzzell, 2006; Kyttä, 2006). These affordances exist at the interface of the person and their environment, and require an understanding of the relationship between them. The Pragmatist philosophers, Mead and Peirce described it as a structuring of experience and action related to perceptions (Rosenthal, 1977, Bredo, 2010)

This article sits within an understanding of participation that was initially developed outside education, but which is increasingly applied to education. Arnstein (1969) proposed a 'ladder of citizen participation' to analyse how people might be involved in the planning and operation of public programmes. This views participation as ranging from 'manipulation', where ideas are basically imposed on users, through 'informing' and 'consultation', which can be of limited worth if done in

isolation, to the genuine participation of 'partnership' and 'citizen control'. Hart adapted this idea of a ladder to describe how children and young people might be involved in projects of all sorts, with their participation ranging through tokenistic inclusion to genuine partnership with adults (see e.g. Hart, 1987; 1997).

Researchers and consultation practitioners working in the area of school design tend to aim to maximise participation at higher levels (Parnell *et al.*, 2008). Generally, this forms an implicit basis to their work, although in some cases they may relate their actions directly to a theory of participation. For instance, Sheat and Beer adapted of Arnstein's ladder to the context of designing school grounds (1994: 94). Such work has resulted in the development of various activities and tools, many of them visually based, which aim to involve students and teachers in discussion about the learning environment (Clark 2005; 2010; Harnell-Young and Fisher 2007; Koralek and Mitchell 2005). Considering such work, Prosser argues that visual methods are particularly useful for facilitating authentic user involvement: 'Emancipatory and participatory research such as photo voice and photo elicitation can gather valuable input from teachers, pupils and others who actually inhabit the built environment' (2007a: 16). The activities used in practice in this context, however, seem generally to be pragmatically chosen, perhaps because they have previously worked with similar participants. Detailed reflection on individual participatory methods or on the contribution of particular sorts of participation to sustainable changes in the learning environment is less frequently developed. Where such analysis is attempted, it is suggested that participation be viewed as an iterative process with approaches providing 'numerous opportunities for children to reflect and reconsider as they construct meanings' (Clark, 2010: 34). There is developing research evidence and understanding pointing to the particular usefulness of visual mediation, such as the use of photographs, maps or diagrams in supporting the elicitation of participants' experiences (Bragg & Buckingham, 2008; Harper, 2002; Prosser, 2007b) In addition, there is also the strong suggestion that a multiplicity of methods allows a more a more complete understanding to be constructed (Woolner, 2010: 60; Clark 2005; Darbyshire *et al.*, 2005), which supports the tendency of practitioners in this area to use a range of activities.

An important aim, therefore, of this article is to interrogate the data produced by instances of participatory activity relating to school learning environments, in light of this existing work, to see when and how such approaches can facilitate engagement and support change.

Significance

This article allows the identification of central issues for participatory approaches to the learning environment. It highlights the role of intent in such enquiries and the role of specific kinds of research tools in facilitating participation and discussion about accustomed practice and thought. The contexts of the two case studies are quite different and developing an understanding which makes sense of findings across these two studies will produce insights which will be important to both practice-based and theoretical understandings of participatory approaches to educational change.

Method

The article considers two case studies of teachers and learners engaging with the physical environment provided by their school. The contexts of these two studies differ, but in both cases the research intent to engage with both physical environment and pedagogy was explicit and planned. The extent to which these intentions were shared by the participants was more variable, however, and there was not an equal expectation of change across the two case studies. One case study concerns a UK primary school (students aged 4 to 11 years) within the context of an investigation of one aspect of classroom teaching and learning space, which was the use of the carpet area. The other case study concerns a UK secondary school (students aged 11 to 16 years) within the context of a consultation of staff and students conducted as part of the initial stage of a proposed school re-build.

The case studies made use of a range of participatory techniques and activities, mediated by both visual and verbal means of communication to collect both quantitative and qualitative data. These included photo elicitation, ranking photographs, drawing pictures and annotating maps, together with discussion and, in the case of the primary school, a questionnaire produced in collaboration with school students. Yet, despite these similarities in the tools used, the contexts of these two studies were very different, as will be described below. This makes any parallels between the two cases in the resulting experience more striking and potentially more significant.

Case study 1

The aim was to place children's and teachers' perspectives and participation as central to the research. This leads to certain methodologies being favoured over others: semi-structured interview data; drawings; pupil-view templates (Wall and Higgins, 2006) and a child-created questionnaire were used. The qualitative approaches allowed a flexible and in-depth interpretation of the meanings and understandings that was supported by the quantitative data.

The study involved one, rural, primary school with 119 children aged from 4-11 taught in five mixed-year classes: YR; Y1/2; Y3/4; Y4; Y5/6 (see table 1 for details). Initial data collection used a range of year groups and teachers (YR, Y3/4, Y5/6) and visual and interview data so that an understanding could develop of teacher compared to children's views of the use of carpet space for teaching and learning. Thematic analysis of the data as it was collected informed the next cycle of data collection. Following the interview data a questionnaire was developed with children from the school council. The questionnaire was delivered to all children, teaching assistants and class teachers in the school. This structured framework facilitated the gathering of different views and perspectives on the areas explored in relation to both individuals and particular groups such as school staff and pupils, thus contributing to the internal validity of the research (Somekh & Lewin, 2005).

Insert Table 1 here

The intention was not to change practice but rather to gain an understanding of what the practice was; and how this practice was understood by the actors in the community of practice, both the adults and children. The researcher had and has no on-going contact with the setting: this was deliberate to minimise contamination of data by pre-conceived assumptions. The research was planned as a partnership with the understanding of the data co-created, so that, for example, participants had access to the data and the results as they were being written up.

In the school the classrooms designed for the very youngest children YR and Y1/2 (aged 4-6y) include a dedicated carpet area as shown in the schematic representation below (Fig. 1) and the photograph (Fig. 2). It is assumed that there will be lots of spills on the floor so it needs to be easy to

clean. The main part of the room has vinyl flooring and the desks arranged in tables which would facilitate group work. Classrooms designed for older children have floors that are completely carpeted. In most cases the rooms are arranged with the desks as tables but in Y3/4 the room has been arranged to give maximum usable carpet space for whole class work. This is also shown below schematically and in a photograph. Although in practice it is possible to re-arrange the classroom for each activity in practice this rarely happens. Once a classroom table arrangement is set up it is difficult to change without upheaval and time, and there is a tendency for teacher and learner to accommodate to the physical affordances. The class Y3/4 was the exception where the layout made re-organising the children to work in groups or individually relatively quick and easy. The photographs make clear the 'busyness' of a primary school classroom where all available space is used for storage and display purposes.

Insert Fig 1 here

Insert Fig 2 here

Case study 2

This case study centred on a consultation carried out by researchers in an 11-16 secondary school of approximately 1100 students and over 100 members of staff. The school was built in 1965 and extended in 1973. It is a CLASP construction, a system of building with standardised parts, developed by a consortium of Local Education Authorities in the 1960s, and designed around the need to withstand the mining subsidence which is common in the counties involved. It was intended that the school be completely rebuilt, as part of the UK *Building Schools for the Future* programme.

Insert Fig 3 here

Over the two day consultation period, the research team worked with a total of 38 teachers, 28 support staff and 107 students. The teachers represented a variety of subject areas and ranged in seniority from newly qualified to Assistant Head. The support staff included special educational needs (SEN) learning support, teaching assistants, administrative staff, technicians, lunchtime supervisors, cleaners, the caretaker and the groundsman. A number of the staff lived locally and often spoke from the perspective of a parent, resident or community-user of the school facilities. All the year groups (Y7-Y11) were represented among the students. The consultation activities took place in the school library and learning resource centre. Any school user who had not been directly involved was invited to come during lunch breaks to make comments to the team, an offer that several staff responded to.

As in case study 1, a central aim was to enable the active involvement of a range of students and staff through the use of a number of visual and spatial participatory activities. These included participants mapping usage and opinions on plans of the premises and responding to and ranking photographs of the school. The participants worked in small (3-6 people) groups which were broadly homogenous, with a researcher who encouraged discussion and reflection, and ensured ideas were recorded. The intention was to facilitate this diverse mixture of people in co-constructing an understanding of the

existing school premises which could be conveyed to the architects to inform the design of the new building.

Insert Fig 4 here

Discussion of results from the case studies

It is necessary to question how the various methods used in the two case studies facilitated the participation of particular school communities and revealed experiences of the school environment, both to the researchers involved and, vitally, to members of each school community. The findings of case study 1 revealed tensions between the teachers' espoused models of pedagogy and the experience of learners. Teachers considered time on the carpet in broadly constructivist terms, allowing them to engage interactively with the children and facilitate their learning (a perspective shared by other teachers and researchers: Berrill & Gall, 1999; Serriere, 2010). Yet the learners experienced it more passively as a time for "listening" and being physically uncomfortable. Importantly, the study allowed some of the students' concerns about the way they were taught to be voiced, clarified and fed back into teachers' professional reflexive practice. In case study 2, the consultation revealed information from a cross section of users, producing a more complete understanding of the complex functioning of the school and enhancing understanding of the relationship of the physical environment to the learning experience. It was notable that discussions introduced issues which were not immediately apparent to the participants and enabled conversations that progressed beyond details of the current setting to consider how particular educational aims might be embodied in school design and organization. In both case studies, the use of mediating activities involving visual material, such as photographs and maps, together with verbal discussion was successful in revealing experiences of the school setting and enabling the participants to understand the school environments in new ways. It is clear that these methods avoid relying on literacy skills and confidence, which could be expected to vary quite widely across the various participants, but reflecting on the methodology and the particular methods of the studies produces other conclusions about the reasons for their efficacy and suggests possibilities for further research.

Insert Fig 5 here

Firstly, the use of visual mediating activities was key to uncovering and making sense of unexpected findings. The case study 2 school was widely perceived as inadequate by its users, yet the participatory activities revealed some positive aspects. The mapping and photograph ranking activities (for examples of responses see figures 5 and 6) explicitly requested positive views, and succeeded in provoking them. The photograph ranking necessitated a top-ranked picture while the map based activities provided stickers to indicate 'places I like' and 'places that work', although participants could choose not to use them. These activities highlighted successful features of the school and also provoked some positive comments, annotations and discussions. It would seem that they did something more than just demand positive comments in the way that an interview question might. As an indication of this, when the head teacher was asked during an initial visit to the school what he liked about the existing school premises, he had replied that it was a "nightmare of a building" and opined that there was nothing good about it beyond the people within. Yet the positive impressions elicited by the visual methods were validated by discussions on the second consultation day. This tendency for visual methods to produce information that is somewhat different from the data collected through traditional methods such as interviewing and questionnaires has been noted in our previous research and by other researchers (Woolner *et al.*, 2007a, 2010; Bragg & Buckingham, 2008; Darbyshire *et al.*, 2005).

Insert Fig 6 here

Secondly, also in line with other researchers in this area, we can conclude from these case studies that it is important to use a range of methods to facilitate the fullest participation (see e.g Clark, 2005; 2010; Darbyshire *et al.*, 2005). In both case studies, the various methods allowed both quantitative and qualitative data to be collected, but they also allowed for individual preferences and needs among the participants. In case study 1, some children enjoyed drawing the carpet space but some found this much more difficult. In case study 2, a group of staff participants refused to complete the picture ranking activity but provided useful information through mapping their use of the school.

A further conclusion that may be drawn from these case studies about research tools is that in some circumstances it is helpful to give participants more structure within which to make their responses. In

case study 1, it was found that the children's drawings were often hard to interpret, with subsequent analysis relying on annotations added by the interviewer as a child talked. The much more structured pupil view templates (pvt) provided a wealth of information and were completed successfully by more participants (see fig. 7 for examples of drawing and pvt). In both case studies there were some difficulties with the unstructured use of photographs. In case study 1 the children tended to concentrate on recognition of pupils rather than what they were doing in the photographs and more focused information was elicited when the photographs did not contain pupils. In case study 2, focus group discussions about photographs of the school were sometimes hard to start or keep going, and the tone of many of the discussions was quite negative. In contrast the photograph ranking activity was generally attempted with enthusiasm by participants, since they could see clearly what was required. This method revealed negative and positive aspects of the school through both the ranking itself and the conversations that were generated. These advantages of more structured visual methods have not been much discussed by other researchers: although Harper does consider the related problem of finding the right photograph to elicit useful interviews (2002: 20), more research into this methodological issue would be valuable for researchers and practitioners.

Insert Fig 7 here

These conclusions about the visual activities all centre on their facility to mediate an encounter between researcher and participants through providing concrete entities capable of 'bridging the gap between the worlds of the researcher and the researched' (Harper, 2002: 20). It must be noted, however, that the physical environment itself should be able to fulfil this role. The fact that, as discussed in previous sections, the school setting is often forgotten, taken for granted or over-looked means that it will not necessarily be able to be used in this way. It would seem that it will be necessary for research methods to draw participants' attention to the space in which they carry out their educational activities, and, as described above the methods used in the case studies were able to do this.

In both case studies, the researchers were relative outsiders to the school communities they investigated, which could potentially have been problematic for developing the relationships needed

to enable participants to feel secure and reflect on their experiences. Yet, through the use of activities to mediate encounters, the researchers were able to connect with the participants so that then their outsider status appeared to be helpful since they could be perceived as more open-minded. In case study 1, the researcher was a trainee educational psychologist but did not have a professional relationship to the school studied, which avoided school staff feeling that she was in a position of power over them. In case study 2, the researchers again had no professional relationship to the school beyond the research and were known to be independent of the local authority and unconnected to any architects. In both case studies, the participants appeared to trust our intentions to be open to their experiences, opinions and ideas.

Theories of participation may help in making sense of these beneficial relationships. As discussed earlier, these theories (Arnstein, 1969; Hart, 1987, 1997) value partnership as embodying genuine participation. In our studies, the particular methods relied on shared physical representations and our overall methodologies centred on process and the feeding back of findings and ideas to participants. Generally, information was shared and understandings were co-created, so there was a partnership between researchers and the participants, as we tried to build understanding of the learning environments of the two schools.

As was argued earlier, it is such relationships supporting higher levels of participation through an iterative process, which could be expected to support the sort of change in educational practices that some architects and designers (and some policy-makers) expect to come from reassessing or changing the physical setting, but which may, in fact, fail to follow. It is important, therefore, to question what evidence there was for change occurring during these case studies of participatory investigation of school environments.

As described above, the findings of the primary school case study revealed a distinct mismatch between teachers' intentions and the experience of learners. This was particularly the case for one teacher and led her to make immediate changes to the way she organised her classroom (see McCarter & Woolner, 2011 for more detail). Class teachers have the power to make changes in the use of the physical space in the classroom and, when challenged by the views of the children, this

teacher was able to reflect on her practice and adapt. There may have been additional more subtle changes to how physical space was thought about and utilised in the school, but this tangible, and unexpected change, initiated by a class teacher is striking. The case study demonstrates how a process of shared understanding, including both adults and children reflecting on the use of physical space in the classroom, can facilitate physical reorganization and begin to enable cultural change. The case study supports the idea that initiatives, imposed top-down, will not easily replace existing teaching methods, with the *status quo* particularly resistant to change when it is embedded in the organization of the physical setting. Yet there is clearly the suggestion here that an appropriate participatory process may enable educators to think differently about the use of space, and for practice to change from the bottom up.

Case study 2 does not provide us with such clear indications of change since the study only covered the initial consultation stage of school rebuilding and, in fact, the school has not been rebuilt. There were, however, a number of suggestions of change in the perceptions of the participants, revealed through their discussions of newly discovered positive aspects of the school and debates about organizational issues to consider in the redesign. Their responses to day two of the consultation, when they were asked to validate the emerging understanding of school needs and contribute design ideas for the new school, suggested that they were broadly positive about the expected changes to the physical setting. Discussions over the consultation period suggested an interest in and awareness of the potential influences of the school setting on learning and teaching, which appeared likely to develop into the sort of positive engagement of the school community with their premises described by Uline and colleagues (2009). It is ironic, given the discussion in this article of top down and bottom up change, that ultimately opportunities for changes in practice to develop through changing the setting at this school have been quashed through a policy-level decision not to rebuild the school.

Conclusion

Change in educational practices is often desired and an absence of effective change may lead to tensions within and between intentions, settings and practices (Alexander, 2004; Brehony, 2005; Galton et al, 1989; Gislason, 2010). Although changes to the setting have the potential to impact on

educational practice, it is clear that such changes do not necessarily occur (Alexander, 2007; Galton, 1989). As discussed above, open plan classrooms, though understood by some educational advisors and school leaders as necessitating a different style of teaching and learning did not always result in changes to actual classroom practices. Experience demonstrates that change does not always flow through a system and suggests that the nature of the actors' participation in the process of change is important. It seems likely that a key to enacting sustainable educational change lies in facilitating collaborations and discussions so that changes to space and organization are coupled to changes in teaching and learning practices and based genuinely on the development of shared understandings of all those involved.

Most generally, apparent resistance to change can be understood as arising from unexamined, unchallenged cultural assumptions held by members of a school community, but this leaves room for suggested change to be apparently accepted by teachers without it significantly influencing their practice and creating pedagogical change. These suggested changes could be to teaching methods, such as encouraging more or less whole class teaching, or to the educational setting, such as providing open plan schools. In both cases the impetus for change may come from 'above' through education policy or from 'below', arising from teachers' experiences. In much of the research referred to previously, however, the desire for change could be seen as coming from 'above', through changes to policy, and it seems possible to question whether change occurs differently if driven from 'below' by the classroom experiences of teachers, students and others. In the context of the learning environment this suggests school users working in partnership to develop joint understandings of existing settings and practices and to consider possible changed physical environments and learning practices.

A synthesis of these two case studies suggests how participatory investigation of the learning environment, conducted by researchers in partnership with school communities, may be successful in enabling reappraisal of practices and settings, allowing for the possibility of change, without imposing an ideological viewpoint which is unlikely to influence subsequent behaviours and activities. As discussed, it can be difficult to challenge the 'taken for granted' as they are often so ingrained in practice that they are invisible to those using them. These case studies demonstrate that mediated

participation, based on the immediacy and accessibility of visual and spatial activities can succeed in enabling fruitful reflection.

Giving voice to users' views on places for learning may also be limited by the social context in which discussions takes place. The power inequalities between adult and child, stranger and school, may work against an honest expression of views. Yet in these case studies, conversations about teaching and learning were achieved through considering the physical environment, mediated by the particular visual research tools and by taking the perspectives and perceptions of participants as valid and meaningful constructions. In both case studies the inclusion of those whose voices are not often heard or acted on was central. In case study 1, the voices of dissatisfied students provoked reassessment and change in the teacher's practice, while in case study 2 the experiences and views of non-teaching staff were sought and included alongside the more standard teacher and student perspectives. The resulting developing, inclusive conversations about experiences challenged the *status quo* of the existing teaching and learning spaces and practices so enabling the possibility of change based on shared understandings and collaborative decisions..

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Table 1: Student distribution throughout classes

Class	YR	Y1/2	Y3/4	Y4/5	Y5/6
Age range	4-5	5-7	7-9	8-10	9-11
N	15	24	25	29	26

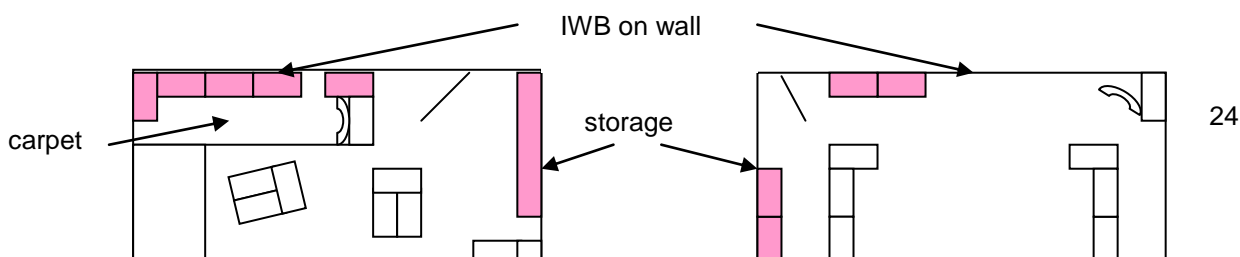


Figure 1: Schematic representations of YR or Y1/2 & Y3/4 classrooms showing differing arrangements of desks and carpet areas – photographs of actual rooms below



Figure 2: Carpet Spaces: in YR (top left) & Y1/2 (bottom left) the carpet area is delineated from the rest of the classroom by a metal strip while in Y3/4 (right) the whole room is carpeted and arranged to maximise the carpet area available



Figure 3: External view of the school, which was one of the images used during the consultation process



Figure 4: A group engaged in discussion (left) and another photograph of the school used during the consultation process (right)

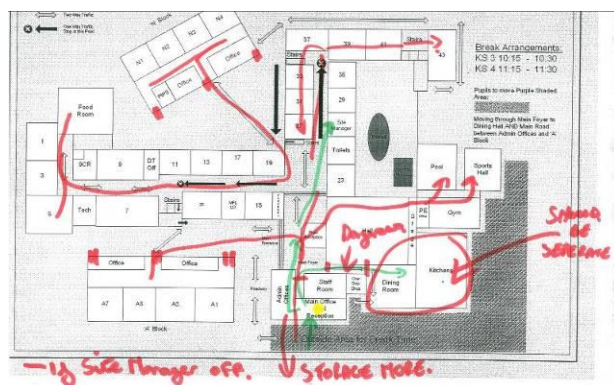
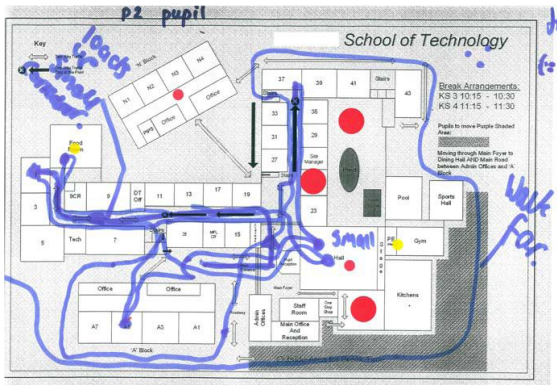


Figure 5: Mappings produced by student (top) and administrator (bottom) during school design consultation in case study 2

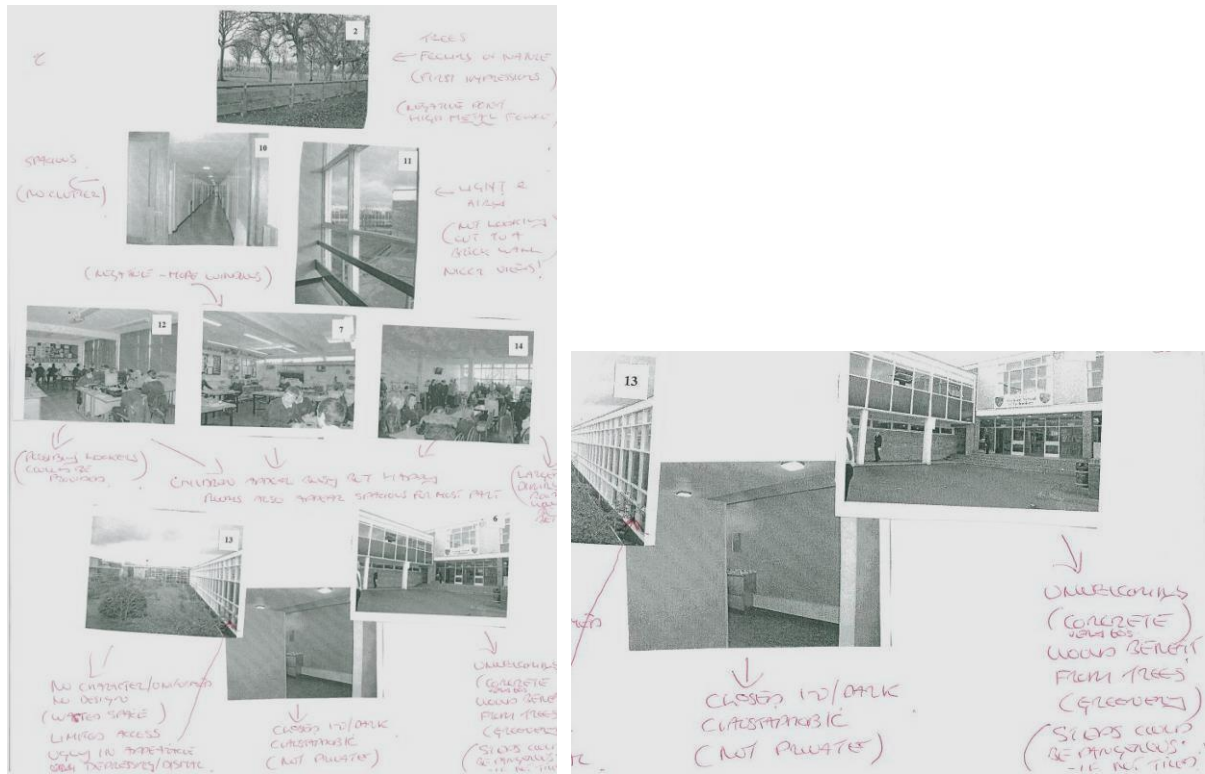


Figure 6: Photo ranking provoked preferences for parts of the school (top) and also elicited underlying ideas about the school premises (see enlargement, bottom)

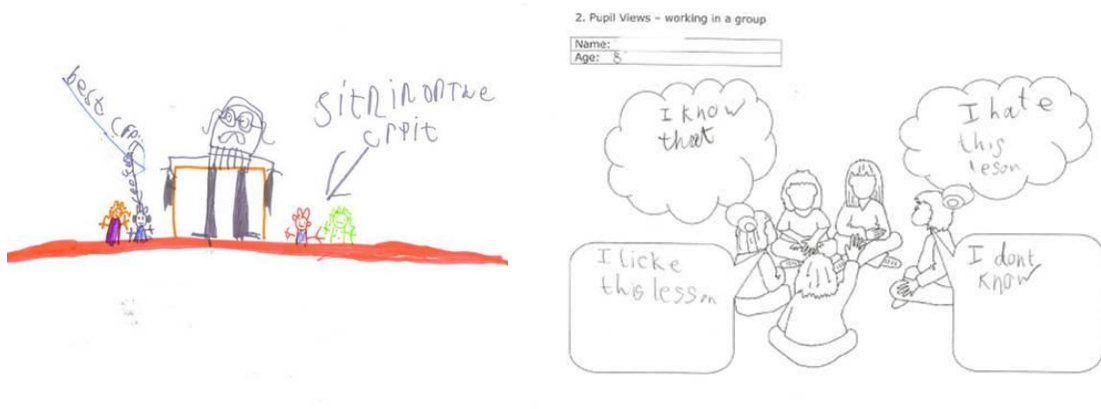


Figure 7: YR drawing of the best time on the carpet (left): listening to the register - the teacher is seated in her chair and Y3/4 PVT showing pupil's understanding of the link between understanding and enjoyment

