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Post-occupancy evaluation of primary schools a multi-stakeholder perspective

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Post-Occupancy Evaluation of Primary Schools: A Multi- Stakeholder Perspective

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**A thesis submitted in partial fulfilment
of the University's requirements
for the Degree of Doctor of Philosophy**

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Abstract

The UK government, under the Primary Capital Programme, is planning to rebuild or refurbish approximately half of all primary schools by 2022/23. The aim is to create primary schools that are equipped for 21st century teaching and learning. Around £7 billion will be invested in the scheme with £1.9 billion of the budget being spent 2008-11, £650 million for all local authorities in 2009-10 and £1.1 billion in 2010-11. However, this substantial investment will only meet the target of providing a 21st century educational environment, with opportunities for exemplary teaching and learning, if the design of new and refurbished schools is fit for this purpose. The research set out to answer the question ‘How can all user groups be involved in the evaluation of newly built primary schools?’ This question was addressed by achieving the aim of developing a post-occupancy evaluation toolkit specifically for primary schools which accounted for the views of all stakeholders. The research focussed on primary schools in the city of Coventry in the UK West Midlands and was conducted in two phases: an examination of schools built before the introduction of a model brief in 1996 and an evaluation of schools that were built using its guidance. The findings from the initial case studies indicated issues to be addressed in the design of the toolkit. Following the initial case studies in pre-1996 schools, the research focussed on five recently built primary schools that were constructed according to the guidelines contained in Coventry’s model brief. At the time of commencing the research, six primary schools had been built using this framework. However, there had been no attempt to evaluate the schools to establish whether they met the needs of all stakeholders. The post-occupancy evaluation toolkit that was developed took a multi-stakeholder perspective on primary school builds and resulted in findings which indicate the variability in responses between different stakeholder groups and schools. The research concluded that the post-occupancy toolkit can provide information on school buildings, from a multi-stakeholder perspective, which may be useful architects and designers. It also proposes an approach to primary school design which accounts for the variability in the needs of diverse stakeholder groups and the individuality of each school, including their geographical location.

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Chapter One: Introduction

1.1 Introduction

This chapter will provide an introduction to the thesis. The first two sections will provide a rationale and context for the research. The following section will outline the aims and objectives and how these were met through the research programme. Any research at PhD level is expected to make a contribution to existing knowledge. This will be elucidated in the penultimate section of the chapter. Finally an account of the structure of the thesis will be provided.

1.2 Rationale for the Research

My interest in school design arose, when, as a primary school teacher, I found that the layout and design of the buildings and outside spaces of schools hindered effective teaching and learning. Poor school design contributed to a negative experience of school for many children, and staff, in the primary school system. The purpose of this research is to find an appropriate method to evaluate the design of contemporary primary schools in order to assess their appropriateness to the needs of all users.

The premise of the thesis is that each stakeholder group should be involved in evaluation. Stakeholders may be defined as the end-users or clients, the people from whom requirements will be drawn, and will potentially reap the benefits of the completed build.

The rationale for this is two-fold. Firstly it should be considered unethical or even immoral for evaluations to be conducted where people who use the environment are not consulted. This could result in feelings of isolation and marginalisation amongst those groups excluded from the process. Secondly there is a practical value in the consultation of all stakeholders. Any evaluation which does not account for the views

of the full range of users will result in a partial or skewed set of results. This may lead to recommendations for changes (adaptations or refurbishments) and design guidelines that do not account for the needs of all users. This in turn could result in inappropriate design.

In the past the voices of some groups have been excluded from the design and evaluation process. Coventry City Council in its guidelines for the design of new schools, for example, asks only that the head teacher should be involved in the design process (Coventry 2005a: 31). Other school users such as teachers, ancillary staff, parents and children are not required to be represented. As the results from this research indicate, this can be problematic leading to design that does not cater for the needs of all groups and often a sense of exclusion.

Evaluation, as part of an ongoing design process, therefore has to account for the views of all user groups. This was held in mind throughout the design of the post-occupancy evaluation (POE) method. Each part of the POE was tailored specifically for individual user groups. A set of questionnaires was designed for each adult user group: management, teachers, cleaning staff, kitchen staff, lunchtime supervisors, administration staff and parents. This ensured that each group could voice their opinions on issues that were pertinent to them and that they were not asked irrelevant questions. For example a teacher would not be able to give an informed view on the suitability of the school kitchens, therefore they were not asked.

Children are a particular group that have been consistently marginalised from participating in design (Hart 1992). This research, therefore, was particularly mindful of the necessity to design a methodology that would take account of their voices and treat them as equally important as adult voices. Equality, however, does not necessarily mean similitude in the design of the method. The sections of the POE

that sought the views of children were designed to be child-centric, age-appropriate and accounting for the interests and abilities of primary aged children.

1.3 Research Context

At the time the research was conducted, the UK government was in the process of rebuilding or refurbishing approximately half of the primary schools in the UK under the Primary Capital Programme. It is envisaged that the scheme will run until 2022-3 with a £1.9 billion spend allocated for the years 2008-11. If expenditure continues at the current rate, by 2022 in excess of a further £7 billion will be spent on the improvement of the primary school stock. Effective evaluation using appropriate methods should form a key part of the government strategy in order to inform the process of design and build and to ensure that the new school buildings provide an optimum environment for all users.

In Coventry new primary school builds and refurbishments are based on a 'model brief' implemented in all primary schools since 1998. The brief includes a set of design principles which aim to support the delivery of the curriculum. It is frequently updated, most recently in 2005. The document explicitly states that

“...the curriculum is the focus when designing new or remodelled schools. The way in which the curriculum is organised, managed and delivered for the benefit of all pupils must be uppermost in the minds of those who have responsibility for its design. The final building must enhance the quality of the provided and received education. It should also ensure a flexible approach to teaching and learning that allows for the implementation of changing philosophies.” (Coventry 2005a:5)

Key design principles include a need for the building to be aesthetically pleasing, to meet the needs of all users including the wider community, to provide good ICT facilities, to be flexible enough to account for a variety of teaching styles and to be adaptable for future needs. However although the design brief states the necessity for evaluation of the building one year after occupancy, no evaluation of these schools had taken place. This was despite the schools being occupied for longer than this, the first having been built in 1998 and the most recent in January 2006.

Both the implementation of the Primary Capital Programme and the lack of effective evaluation strategies led to a need for a systematic approach to school building appraisal. The research was conducted in a policy context that rendered it timely and necessary.

The discipline of educational ergonomics provides an academic context for the thesis. The importance of research into the spaces of education and their impact on stakeholders has been stressed by researchers in this subject area (for example, Bennett 2002b, Bennett and Tien 2003a, Woodcock *et al.* 2009). This research will draw on findings from previous ergonomic research. However it also recognises the possibilities afforded by drawing on other academic disciplines. For example an understanding of approaches adopted by researchers in the new social studies of childhood contributed to the design of an appropriate child-centred method. Furthermore, the inclusion of geographical elements indicated the possibility of a 'spatial' aspect in educational ergonomics. These additional elements, it is argued, may contribute to a revised approach to educational ergonomics. This will be further explored in chapter two.

1.4 Research Question, Aims and Objectives

The question that the research set out to answer is:

How can all user groups be involved in the evaluation of newly built primary schools?

In order to answer the question an overall aim and specific objectives were developed with the overall aim being to develop a post-occupancy evaluation method that takes into consideration all user groups. This will be achieved through the following specific objectives:

1. To assess existing methods of evaluation
2. To establish the key areas and issues the method should evaluate
3. To develop and test the validity of the method through the evaluation of newly built primary schools
4. To demonstrate that the method can produce design guidelines and useful material for re-design.

The first objective was met through a review of existing methods of post-occupancy evaluation and of other participative methodologies.

The second objective was fulfilled by close observation and interviews with children and adults who attended three case study schools. An analysis was made of issues arising from the experiences of adults and children within the physical school environment. This was achieved through observations and informal interviews made throughout the whole school day, for example during formal lessons, during times of transition i.e. when moving through corridors, and during informal times such as lunchtime and breaks. The influence of the physical surroundings on the children and

adults was further interrogated by more formal semi-structured interviews with management and teaching staff. In addition children were asked to document their experiences with school through photographs and follow-up interviews concerning their relationship with the places they had selected (Newman, Woodcock *et al.* 2007a).

The results indicate that the needs of children and adult users are not always accommodated in present day schools. The findings from the case studies set out in chapter four were used in the development of the post-occupancy toolkit through the identification of issues that needed further evaluation.

The third objective was met through the development and implementation of a post-occupancy evaluation of primary schools in the Coventry area. This comprised a set of in-depth questionnaires for all adult stakeholders, including all staff and parents, and a scheme of work for children. It also included a storybook and accompanying worksheet for key stage one children and a workbook for key stage two children. This toolkit was used to gain insights from all users of the primary school.

The final objective was achieved through the analysis of the data gained through the toolkit, which resulted in a set of guidelines for the design of new primary schools. The efficacy of the toolkit was demonstrated by the extent to which the results derived from its use could be turned into design guidelines and recommendations. Crucially, it was shown that all stakeholders can make meaningful contributions to the evaluation process.

The initial research concentrated on primary schools built more than three decades ago as representative of the type of schools where many children are educated. This

knowledge was used in the development of the POE toolkit which evaluated the extent to which the problems highlighted had been alleviated in more recent builds. Coventry City Council has developed a model brief for future primary school builds. Six of these schools have been built since 1998, with the most recent having been completed in August 2006. However no systematic post- occupancy evaluation has been performed on the schools. This is despite it being widely accepted that the environmental conditions of schools can have a massive impact on the health and safety of children and adults in school, and affect the ways in which teachers teach and children learn (Bellomo 2006:264). It may be hypothesised that conditions in schools will be improved by effective evaluation and the implementation of corrective action.

A review of existing POE methods revealed that current techniques did not fully account for the views of all users. Neither do they examine whether the school is suitable for the needs of present day education, or whether it is flexible enough to accommodate changes in future approaches to teaching and learning. Therefore the development of a set of tools that are specific to the evaluation of newly built primary schools was considered a necessity. This was used to gauge the success or otherwise of five new-builds in Coventry.

The information gained from the evaluation enabled the development of revised guidelines for architects and designers involved in the planning of primary schools. It also provided feedback for Coventry City Council regarding the positive and negative aspects of the recent builds and of the model brief. The guidelines are also intended for the use of educational architects, education authorities and individual primary schools about to embark on the process of design and build.

The results of the research also led to the conclusion that the requirements of stakeholders are contingent upon geographical location, and that designers must account for this variation in their designs. A 'one size fits all' approach to school design is not appropriate, and the individual location and needs of the community should be accounted for.

Results have been disseminated throughout the project at various academic conferences (Newman, Woodcock *et al.* 2007a, Newman, Woodcock *et al.* 2008, Newman, Woodcock *et al.* 2009a, Newman, Woodcock *et al.* 2009b). Final results were disseminated through a workshop for architects, designers, education authorities and other interested parties, where the findings were presented and discussed. These results were also published as a peer reviewed paper (Newman, Woodcock *et al.* 2009a)

1.5 Proposed Contribution to Knowledge

The contributions to knowledge proposed by this thesis are as follows:

- **Methodological** The development of the first post-occupancy evaluation toolkit specifically designed for primary schools. This is original in its premise that all stake-holder voices are of equal value, and therefore POE toolkits must be designed to accommodate a multiplicity of voices, including those of children. Following the completion of the research the method was adopted by Coventry City Council to assess primary school builds that were completed after the empirical research stage. It will be used to evaluate future primary school builds in the city.

- Empirical New knowledge about the appropriateness of newly built primary schools has been established through the research, leading to the development of design principles specifically for primary schools. The knowledge gained from the evaluation has been fed back to Coventry City council and the recommendations will be used to inform future builds.
- Theoretical The potential link between the academic disciplines of educational ergonomics and geography is explored, indicating the possibility of a 'spatial turn' in educational ergonomics. The potential for using qualitative methods that have not been traditionally used in educational ergonomics has been explored, for example those advocated by the new social studies of childhood. This indicates the potential for a revised approach within the discipline.

1.6 Structure of Thesis

Following Chapter One: The Introduction, the remainder of the thesis will take the following structure:

Chapter Two: Review of the Literature

The literature review will be conducted in four sections:

1. A review of educational ergonomics, including current definitions, the impact of ergonomics factors on schools, the role of school design in supporting learning and a brief history of school design.
2. A review of emerging issues from the discipline and potential challenges
3. The third section will be a review of the possibility for a revised educational ergonomics, indicating how other academic disciplines may contribute to the development of a revised educational ergonomics. This includes a review of

the methods and approaches more commonly used in fields of social science such as human geography and the new social studies of childhood. This section will also include a critique of currently available methods of POE.

4. The final section will link back to the research, indicating current deficits in the literature and how the research will contribute to a revised approach to educational ergonomics.

Chapter Three: Methodology

Following on from the literature review and the potential for alternative approaches to educational ergonomics, Chapter Three will outline the development of the research methodology. First the philosophical premise is set out, including the adoption of a constructionist standpoint which rejects the concept of overarching truth in favour of hearing a range of voices and viewpoints. Following this an account is provided of how user groups were accessed.

Thirdly a chronological account of how the method was developed will be provided with justification of the decisions taken. This is followed by the final section which presents a reflection on other issues such as ethical considerations, validation of data and the researcher's positionality will be explained.

Chapter Four: Case Studies of Three Pre-1990 Schools

The first stage of the empirical research will be set out in this chapter. The case studies presented aim to assess the suitability of schools built before 1996 and to use knowledge gained to develop a post-occupancy toolkit. This was achieved through in-depth, semi-structured interviews with children and teaching staff, observations made over the course of a term in the subject schools including time

spent in formal lessons and informal break times. Self-directed photography was also used as a method in order to provide a focus for interviews with children about their school environment.

Chapter Five: Results of the Post-Occupancy Evaluation Toolkit

Chapter Five will present the results gained from the implementation of the toolkit in five Coventry primary schools built to the model brief. It will provide brief background information on each of the schools.

A discussion of the results from the implementation of the post-occupancy evaluation will be presented, focussing on the following themes:

- Behaviour and ethos
- Maintaining dignity
- Teaching and learning
- Play and social areas
- Safety and security
- Design process
- Aesthetics
- Ergonomic factors

Chapter Six: A Critical Evaluation of the Coventry Model Brief

In this chapter a critical evaluation will be presented of the extent to which the POE enables all voices to be heard, the value of this and the insights it provided, especially in terms of guidelines and design recommendations.

Chapter Seven: Conclusions and Reflections

The conclusion will summarise the work achieved throughout the project, its key findings and future implications. It will also give the researcher's reflections on the project and implications for the conduct of future research, for example how lessons learned will inform the design and implementation of further research

Finally details of how the researcher intends to extend the research into a method which may be used throughout the UK will be given. The next chapter will provide the academic context for the research through the presentation of a review of the relevant literature.

Chapter Two: Review of the Literature

2.1 Introduction

The research set out to answer the question:

How can all user groups be involved in the evaluation of newly built primary schools?

In order to answer this, a post-occupancy evaluation method that took into consideration all user groups was developed. The following chapter will present a review of literature which informed its development.

The first section provides a brief outline of policies concerned with educational transformation which were in place at the time of the research and how these may affect future primary school buildings. This is followed by a review of literature from educational ergonomics, including a definition and findings from key research into environmental factors and their effect on schools. Currently, although educational ergonomics recognises the pupil as the central user of teaching and learning environments, it does not propose any ways in which the experience of this diverse group can be captured. The review will inform the development of an appropriate method which will capture the voices of all stakeholders.

The aim of the research was to produce a post-occupancy evaluation method which would enable all user groups in the primary school setting to participate in evaluation. The review therefore will present a critique of existing POE methods. The final section will demonstrate how the literature has informed the development of the method.

2.2 Educational Transformation

The Primary Capital Programme aims to rebuild or refurbish approximately half of all primary schools over the next fifteen years. One of the key aims in doing so is to effect educational transformation for primary school children. The Primary Capital Programme will, according to the government's 'Primary Strategy for Change' document

- create primary schools equipped for 21st century learning, at the heart of the community, with a range of children's services in reach of every family;
- deliver a strategic approach to capital investment - supporting national policy aims, delivering world class standards, access to joined-up services for children and families; and addressing local needs and priorities;
- rebuild, remodel or refurbish at least half of all primary schools, including rebuilding or taking out of use at least 5 per cent of school buildings in the worst physical condition (higher for the most deprived communities);
- focus resources on deprivation nationally and in every authority; and
- reconfigure the primary capital stock to account for demographic change.

(Dcsf 2007)

In addition to this, the primary capital programme must also support the proposals for educational transformation in the primary curriculum which will come into effect in 2011.

According to the recommendations for curriculum change made in the 'Independent Review of the Primary Curriculum' (Dcsf 2009d) the new framework for teaching and

learning in the primary sector will involve a greater level of cross-curricular integration, whilst maintaining clearly defined subject areas. There is recognition that many teachers consider the curriculum to be overloaded with content. As a comment included in the review from the Historical Association makes clear

‘the National Curriculum as it stands is overprescribed, and this is detrimental to teaching and learning. We fully support a modified framework that supports the development of a less prescriptive and a more flexible National Curriculum that draws upon subjects like history as tools for learning’ (DCSF 2009d:15)

The new curriculum will address this by its organisation into six key areas of learning:

- Understanding English, communication and languages
- Mathematical understanding
- Scientific and technological understanding
- Historical, geographical and social understanding
- Understanding physical development, health and wellbeing
- Understanding the arts.

There will be a stronger focus on the teaching of English, maths and ICT, which will emphasise the practical application of the subjects through for example, the development of skills required for effective speaking and the application of mathematical concepts in everyday situations such as counting and measuring.

As well as academic achievement the new curriculum will have:

‘a greater focus on schools encouraging personal development – to help children grow up happy and healthy. This will emphasise developing children’s confidence, enhancing their ability to learn, and helping them to grow up to become responsible adults.’(DCSF 2009a)

Other core skills include:

- Learning and thinking skills – which include investigating and looking for patterns
- Personal and emotional skills – which include working independently and setting goals
- Social skills – which include taking turns, sharing and understanding other people’s feelings.

In order for the Primary Capital Programme to achieve its objective to ‘create primary schools equipped for 21st century learning’ school built under the scheme should support the educational transformation proposed by the primary curriculum review.

For example the new curriculum may require a greater level of flexibility to accommodate greater independent working, or lessons that take cross-disciplinary approach.

As well as accounting for the curricular needs of primary aged children, the school building should also provide accommodation that meets the physical needs of its users as well as optimising the learning environment through the adoption of ergonomic principles. The next section will discuss the ways in which an

understanding of educational ergonomics can contribute to more appropriate school design.

2.3 Educational Ergonomics

In the 2000 the International Ergonomics Association defined ergonomics as “the scientific discipline concerned with the understanding of interactions among humans and other elements of a system”. It also looks at system and product design.

Ergonomics has also been defined as:

‘the theoretical and fundamental understanding of human behaviour and performance in purposeful interacting socio-technical systems, and the application of that understanding to design of interactions in the context of real settings’ (Wilson 2000).

Educational ergonomics, a relatively new sub-discipline, examines the link between the physical characteristics of children and their learning environment (Bennett and Tien 2003b) and how this impacts on their education. Bennett (2002a) has observed that there is a disparity between the anthropometric dimensions of children and their learning environment, for example furniture that does not match children’s stature may lead to physical discomfort including back pain. Where students experience physical discomfort (from whatever cause) they will be unable to concentrate on the task in hand. Socio-economic and health differentials (Knight and Noyes 1999) may also affect the relationship between young people and their environment. In addition the curriculum may have a “knock-on” effect on children’s physical health. For

example a study by Whittfield *et al* (2005) indicated that children are required to carry bags containing books and other equipment necessary for their schoolwork well in excess of what is legally allowed for adult industrial workers.

It is widely accepted that the design of the school environment, internal and external, has profound effects on the activities and outcomes of teaching and learning, both formal and non-formal (Higgins, Hall *et al.* 2005). However the exact nature of these effects is open to much debate. This review will outline research concerning the influence the school environment has on children and adults.

As well as contributing to the academic wellbeing of students, the school should promote social interaction and a sense of community and inclusiveness. As the Commission for Architecture and the Built Environment, which leads a campaign, entitled “Better Public Buildings” stated:

“...we know that good design provides a host of benefits. The best designed schools encourage children to learn” (C.A.B.E. 2006).

An investigation by Price Waterhouse Cooper, commissioned by the DfES found that there was “a positive relationship between capital and performance” and more specifically between “physical school environment and pupil performance” in schools (PWC 2001). The report goes on to state that:

“The general attitudes, behaviour and relationships amongst pupils and staff are more conducive to learning in those schools which have had significant capital investment” (PWC 2001).

A comprehensive literature review on the impact of school environments was undertaken by Higgins *et al.* (2005). This review examined various aspects of the school: system and processes, the built environment, physical environment in the classroom, products and services and communication. The broad conclusions of the review were that there is strong evidence that physical elements such as air quality, temperature and acoustics, have a tangible effect on learning and should therefore be taken into account from the earliest stages in the design process. Other elements appear to affect student behaviour and attitudes, but no generally applicable conclusions could be drawn.

The remainder of this section, through an examination of the literature, will explore the impact of several significant variables on school students and staff.

As a framework for this section, the physical aspects of the school will be discussed: the classroom, light, temperature and humidity, indoor air quality, acoustics.

2.3.1 The Classroom

Children and teachers will usually spend the greatest proportion of the school day in the classroom environment. It therefore seems appropriate that part of this review is given to a discussion of the effect the classroom may have on teaching and learning as well as general wellbeing of the users.

Class Size and Classroom Density

Maxwell (2006a) explains that there is a difference between the size of a school population and density of that population. For example a school may have a small number of children, but if the children do not have sufficient space then it may be of high density and therefore crowded.

High density in classrooms has been found to have detrimental effects on several variables that could affect children's ability to learn, for example increased aggression, conflict, decreased social interaction and non-involvement (Aiello 1979, Moore and Lackney 1993). It can also result in stress and poor health, including high blood pressure (Evans *et al* 1998). Maxwell (2006a) explains that high density gives rise to feelings of crowding caused by lack of privacy, or the inability to control interactions with others, and overstimulation, which can make concentration difficult. Children may "tune out" by daydreaming. This has an obvious negative impact on learning.

For children with learning difficulties the problems associated with crowded classrooms are exacerbated. They may become aggressive or withdrawn when either density is increased (Mcfee 1987).

The Student Teacher Area Ratio (STAR) project, a longitudinal study of 6500 children in Tennessee studied two groups of students: those in classes of 13-17 per room, and those in classes of 22-25 per room. Children in the smaller groups were found to score higher in all Stanford Achievement Tests, especially for reading and mathematics, with an improvement of up to 15% (Finn and Achilles 1990). The use of tests to assess the effectiveness of children's learning is controversial, but it does give an indication of the progress made by children.

Teachers are also likely to be less stressed in less crowded situations, meaning they are more likely to allow children more variety in the types of educational experiences they have (Moore and Lackney, 1993).

Classroom Layout

Pedagogic thinking during the 1960s and 70s, following the Plowden Report, (1967) recommended an integrated approach to education in primary schools which required open plan classroom design. Open plan classrooms have been linked with higher levels of student anxiety, particularly amongst the less able (Cotterill 1984). This layout has been associated with unacceptable noise levels. One study found open plan classrooms had consistently higher background noise than discrete classrooms and lessons were restricted to quiet activities so as to avoid disturbing other classes or groups of children (Airey 1998). Building Bulletin 93 (BB93) "Acoustic Design of Schools" states that open plan classrooms severely restrict the type of activities that children can engage in. It also states that although theoretically adequate sound insulation can be provided by movable walls they are prohibitive due to their cost, weight, complexity and the time taken to manoeuvre them. Clearly open plan layouts pose particular problems and are often refitted with partition walls to make them more usable (Newman *et al.* 2007a)

2.3.2 Lighting

In the design of a new school building, lighting is one aspect where due consideration must be given at all stages of the planning process. Light, according to Wurtman (1975), is the most vital environmental factor after food and water in the control of bodily functions. Poor lighting makes the perception of visual stimuli, such as written texts, difficult and therefore affects attitudes to learning and student performance (Dunn *et al.* 1985, Phillips 1997, Jago and Tanner 1999). These researchers claim that lighting is central to the design of the total school environment, contributing to both the aesthetic and psychological nature of the learning environment. It also impacts on health and well-being. Poorly or inappropriately lit classrooms can cause jetlag type symptoms (Tanner 2000). From

the early days of school buildings it has been recognised that light, or its absence, has an effect (Manning 1967, Wurtman 1975, Wu 2003, Erwine 2006). Robson, architect to the London School Board and the first to write on the importance of school design stated that:

“It is well known that the rays of the sun have a beneficial influence on the air of the room...they are to a young child what they are to a flower” (Robson 1874).

This was reflected in the use of tall windows in schools built during this period for light and ventilation.

Plympton (2000) found that students in classrooms having the most daylight progressed faster than those in the least daylit rooms. These findings were supported by comparative research on four elementary schools in the U.S.A., that found an overall improvement of 14% in daylit schools (Nicklas and Bailey 1995). Other research found that children with more daylight progressed 20% faster than their counterparts without daylight (H.M.G. 1999). Classrooms cannot have full daylight at all times, however there are lighting systems available that mimic natural light which have been found to have a positive effect on school attendance, achievement, growth and development, (Hathaway 1990) and should therefore replace standard bulbs (Hughes 1980). In order for artificial light to be fully effective it has been argued that it should dim automatically, to mimic natural light (Benya 2001, Benya *et al* 2003). Although it is not entirely clear why day light should have such a clear and profound effect on students' performance, suggestions have been made as

to the causes: clear and precise sight and reduction of mental fatigue due to the changing light source (Erwine, 2006).

It is not only the presence of natural light that affects students and staff. Other aspects such as controllability and glare have an impact on learning. It has been found that in classrooms where direct sunlight, or glare, is allowed to enter through skylights standardised test scores fall (H.M.G. 1999, C.E.C. 2003).

As well as academic attainment, lighting can affect the health of students including the production of vitamin D, mood swings, depression and headaches (Guzowski 2000, Benya 2001, Benya 2003). There is also an association between the flicker of fluorescent lighting and some serious health problems such as epilepsy (Harding 1994). The distraction of flickering lights can also exacerbate the symptoms of ADHD and autism (Thompson 1999, Kluth 2004). It is suggested that the use of flicker free full-spectrum lighting should be used to combat some of these problems (Karpen 1993).

2.3.3. Temperature and Humidity

Temperature has direct effects on the human body. According to Jaakkola (2006) "Temperature is probably the most important indoor air quality parameter in schools...surprisingly small variations in temperature and humidity may feel uncomfortable and disturbing." Despite this little research has concentrated on the potential links between thermal conditions and the performance of children in schools. The literature that does exist suggests a link between higher temperatures, discomfort, lack of concentration and poor behaviour. It has been argued that "physical and cognitive effort in schools is as much contingent on climatic conditions as they are on social cultural and psychological conditions." (Smith and Bradley 1994). The article goes on to say "equality and quality of educational outcomes may

be curtailed in school settings where both teachers and students endure working conditions that are objectively restraining because of background climatic conditions” (Smith, 1994). Extremes of temperature have been associated with irritability and distress, and have been found to be a cause for concern in workplaces. A field intervention experiment found that reducing temperature in a classroom from 23°C to 20°C increased work rate in both subtraction and reading (Wargocki *et al.* 2005). Mental performance has been found to decrease in conditions above 90°F (Bell 1976 and Baron, Bell *et al* 1990). Test scores of children were considerably lower in non-air conditioned rooms than those with air conditioning (Kevan and Howes 1980). This confirms similar results from an earlier study (Schoer and Shaffran 1973). Increased temperature is also associated with headache, poor concentration, fatigue and lethargy (Wargocki *et al.* 2002). Studies conducted in the 1960s and 70s indicated that increased temperature adversely affects academic performance (Lofstedt *et al.* 1969, Wyon 1970, Wyon and Holmberg 1972, Wyon *et al* 1979). Behaviour was also negatively affected, which in turn has an impact on learning (Wyon, 1972). More recent research has reinforced these findings (Wargocki *et al.*, 2005).

Research using the judgement of teachers to assess work levels of students also indicates a correlation between high room temperatures and low productivity (Lofstedt *et al.* 1969, Auliciems 1972, Lee 1976).

The existing literature indicates that temperature and humidity can have physical and psychological effects, both direct and indirect on the functioning of people in school environment.

2.3.4 Acoustics

It is now widely concluded that noise and poor acoustics in classrooms can have a detrimental effect on children’s learning and academic achievement (Hetu *et al* 1990,

Evans and Lapore 1993, Lundquist *et al* 2000, Mackenzie 2000, Maxwell and Evans 2000, Shield *et al.* 2002, Shield and Dockrell 2002, Gifford 2002, Shield and Dockrell 2003, Klatte *et al* 2005, Dockrell and Shield 2006). Effects have been found to be particularly deleterious amongst primary aged children (Green *et al* 1982, Crandell and Smaldino 2000). Excessive noise impacts on attainment in various areas of children's learning, for example reading (Bronzaft 1975 and McCarthy, Bronzaft 1981, Lukas *et al* 1981, Green *et al* 1982, Evans and Maxwell 1997, Mackenzie 2000, Shield and Dockrell 2002), memory, (Fenton *et al* 1974, Johansson 1983, Hygge 1993), concentration and behaviour (Lehman and Gratiot 1983, Evans and Lapore 1993).

Children are found to be more effected by noise than adults (Nelson 2003), however it can also effect the performance of teachers (Ko 1979, Sargent 1980), often manifesting itself in vocal problems caused by the necessity to increase the volume of the voice in order to compete with extraneous noise, thus straining the vocal chords (Crandell 1995 and Smaldino, D.F.E.S. 2003a).

Noise in school environments is defined as "any unwanted sound that interferes with classroom communication and is both disturbing and detrimental to the learning process" (Maxwell 2006). It can be external, for example from air or road traffic, or internal resulting from sources such as extraneous speech or heating systems. Noise problems are exacerbated by poor acoustic design in classrooms. Two aspects form the acoustic make up of the classroom: noise and reverberation time (RT) (Shield and Dockrell 2003, Dockrell and Shield 2006). Reverberation is the "persistence or prolongation of sound within an enclosure as sound waves reflect off hard surfaces" (Crandell and Smaldino 2000). If RT is prolonged then it has severe adverse effects on the perception of speech, making spoken words merge into one

another, rendering them inaudible. This will have detrimental effects on children's learning as they are unable to listen to their teacher's instructions. The combination of noise and a high RT may result in a 40-50% reduction of speech perception (Crandell and Smaldino 1995).

Another key aspect of classroom acoustics is the signal to noise ratio (SNR), which is the difference in decibels between the level of the voice of the speaker and the background noise level (Manlove *et al* 2001). Maxwell (2006) states that for children with normal hearing the SNR should be 15-20 decibels.

For children who have special needs the problems associated with noise and poor acoustics are exacerbated. Children with hearing deficits are more likely than those with normal levels of hearing to be held back a grade in schools in the US (Bess *et al* 1998) and are more adversely affected by prolonged RT than those with normal hearing (Finitzo-Hieber and Tillman 1978). This should be of particular concern as the percentage of children with hearing problems, permanent or temporary, at any one time may be as high as 40% (Nelson 2003). In the U.K. approximately 75% of children with hearing deficits are taught in mainstream school, (Eatough 2000). The acoustic environment should therefore be of particular concern for those designing classrooms environments.

Children with learning difficulties have also been found to be further disadvantaged by poor acoustics (Bradlow *et al* 2003, Maxwell 2006). Those with autistic spectrum disorders may have difficulties distinguishing speech from background noise (Alcantara *et al* 2004, Maxwell 2006) and therefore would have great difficulty in an environment with interference from background noise.

Building Bulletin 93 (BB93) (D.F.E.S. 2003a) provides advice and guidance on acoustic design. It states "Unfortunately a large number of classrooms in the UK

currently suffer from poor acoustics. The most serious acoustic problems are due to noise transfer between rooms” (DFES 2003). The problems with sound transfer are caused or exacerbated by old stock not being suitable for modern teaching, inadequate sound insulation in modern buildings, open plan layouts and multi-purpose rooms having conflicting acoustic needs (for example an assembly hall needs a long reverberation time for music and a shorter one for speech). These factors will have to be taken into account in the design and refurbishment of new school buildings.

There is a great deal of evidence to indicate the impact design can have on the physical and educational experiences of children and staff in schools. For any learning environment, these may be summarised as follows:

- The learning environment, particularly issues concerning density and layout can affect the behaviour and learning of children as well as stress levels of staff.
- Good lighting, preferably daylight, is essential for good visual acuity and to avoid effects of poor lighting such as lethargy.
- There is a link between higher temperatures, physiological discomfort, such as headaches as well as lack of concentration and poor behaviour.
- High noise levels exacerbated by poor acoustics have been linked to lower achievements in reading tests, loss of memory capacity and poor learning due to the inability to hear speech clearly. These problems are increased when children have learning problems.

As these issues have clear and demonstrable impacts on the educational experiences of children as well as the working environment for staff, they should be of high priority when the authorities embark upon the design of schools. As indicated in the introduction it has been suggested that capital investment, such as the Primary Capitals Programme, can have a positive impact on the school experience. However capital investment through rebuilds or refurbishment is only fully effective if it provides design and builds that provide the necessary physical arrangements to provide a comfortable, appropriate learning environment.

Educational ergonomics is clearly making a contribution to ensuring the physical comfort of children and adults within the school environment. However, ergonomics has traditionally been associated with a hard 'scientific' approach which utilises predominantly quantitative techniques. These do not account for more subjective elements of the human experience, such as feelings or emotions that certain environments may evoke in individuals. The following section discusses some of the challenges arising within educational ergonomics.

2.4 Emerging Issues and Challenges from Educational Ergonomics

The school has to ensure provision for the physical comfort of staff and students. These may be evaluated through the positivist paradigm which dominates the methods adopted in the discipline of ergonomics. Examples from the previous section typify ergonomic research into educational environments. Although the studies provide important insights into discrete aspects of the physical school environment, the studies do not take a holistic approach. It could be argued that educational ergonomics has been largely reductionist in its approach, studying the school which is an extremely complex system, in terms of its component parts. For

example individual studies on the physical effects of heating or lighting have a valuable role to play, however, to date ergonomic research has not attempted to assess the impact of many variables on a school or set of schools. This aim of this research was to develop a method that would account for the full experience of stakeholders in school, rather than focussing on one individual aspect of the physical environment. Ergonomists have always grounded their work on observations of real-world situations. However, what is lacking is an awareness of methodological approaches from other academic disciplines. In terms of educational ergonomics appropriate methods have not been developed which set out to understand children. This research set out to fill this gap in the knowledge.

The school building has to support teaching and learning as well as social and emotional aspects of the daily experiences of school stakeholders. For example traditional ergonomics would accurately measure the reverberation time through conducting an acoustic audit of a school classroom and state the physical effect this may have on the ability to hear human voices. However this approach may not consider the emotional effect this could have on, for example a child who is told off for not listening, when in fact he or she is unable to hear instructions or a teacher who has to continually shout to make him or herself heard.

This research calls for a revised approach to educational ergonomics to include stakeholders' affective relationship with the physical school environment, including feelings evoked by the school building. In order to achieve this, a method had to be developed that could be used to provide a more holistic approach to evaluation, whilst still leading to the development of recommendations. It was necessary to review approaches taken by other disciplines that had the potential to inform a

revised approach. Human geography studies the relationship between people and their environments and utilises a wide range of methods, including qualitative approaches which seek to account for individuals' experience of place. An understanding of human geography and the approaches taken within the discipline through a review of appropriate literature would contribute to the development of a method that could both examine the appropriateness of the physical environment and the less tangible emotional aspects of place.

This research also aimed to listen to the voices of all stakeholders, including those who have traditionally been marginalised from the research process. The research started from the premise that all users could contribute meaningfully to an evaluation of school buildings if an appropriate method was used that enabled all voices them to be heard. Although all stakeholders were considered of equal value in terms of the contribution they could make to the research, special attention had to be paid to children in the design of the research method. There are three reasons for this: children have traditionally been excluded from the research process, or when they have been included their involvement has often been superficial or tokenistic (Hart 1992). Care therefore had to be taken to redress the balance and to ensure the method accounted sufficiently for children's voices. Secondly, given that the research was being conducted with primary school aged children, the research methods had to be designed to be appropriate in terms of age and ability, ensuring that less able children were not excluded from the process. A review of methods and approaches that account for the specific needs of children was therefore made in order to inform the design of the method.

Finally, research in the field of children's geographies has revealed that children often have a different relationship with place to that of adults. A review of relevant

children's geographies research would inform the development of the method to ensure differences between adults and children's perceptions were accounted for.

2.5 Human Geography: Methods and Approaches

Understanding localities as lived-in-place is central to human geography. Tuan (2001) suggested that place is formed through 'fields of care' created through the emotional attachment of people. He says that 'place' is connected with security and stability (2001:6). Relph (1976) proposed that some places were more 'authentic' than others, and that this authenticity was dependent upon the connection between people and place. Although 'authenticity' is a contested term, it could be argued this authentic connection is magnified by the individuality and idiosyncrasies within a place. Harvey (1996) argued that the search for an authentic 'sense of place' may result in exclusionary practices and 'militant particularism', through the segregation of people who 'do not belong' in a specific place. This definition of a 'sense of place' as a reaction to wider global forces such as immigration has been contested by, among others Massey (1997) who asks:

'Is it not possible for a sense of place to be progressive; not self-enclosing and defensive but outward looking?' (1997:316).

She argues that a sense of place need not come from a bounded internalized history or 'heritage'; instead it may come from a 'particular constellation of social relations, meeting and weaving together at a particular locus...' (1997:312). Despite Massey's celebration of the specificity of place, it could be argued she seems to reject the importance of the fundamental *material* nature of place. Jackson has argued that

understanding of place as a central theme in human geography should be 'conceived of not as a featureless landscape on which events simply unfold, but as a series of spatial structures which provide a dynamic context for the processes and practices that give shape and form to culture' (Jackson 1989). Lee (1997) sustains the argument concerned with the importance of the materiality of place stating that it is not:

'a convenient, unquestioned location upon which things happen, people live and work and social processes develop and transform, but as a historically determined site upon which the effects of prior social relations produce a complex array of meanings' (1997:127).

He goes on to say that places

'Represent the historically constituted embodiment of particular social meanings, values and attitudes, then the *precise specificity of location matters* and in the first instance should not be regarded as reducible purely to the functional product of general or universal processes or phenomena' (1997:127-8).

Human geography recognises the importance of place to the human experience. In recent years many human geographers have focussed their attention on the narratives and experiences of place from a variety of marginalised groups and have used methods, such as participatory action research (PAR) that seek to enable previously marginalised voices to be heard.

The postmodern approach to a great deal of recent geographical research emphasises the fragmented nature of human experience, the lack of conformity and the multiplicity of 'reality'. Rather than one overarching theory or meta-narrative, importance is placed on multiple views or meanings which are connected to specific time and place. For example there are clear differences in the ways that place is perceived and experienced by adults and children, yet adult voices have been consistently privileged over those of children. Recent developments in the field of children's geographies, for example, have sought to redress this and have contributed to an understanding of the particular nature of children's relationships with specific places. This research seeks to build on both the methods adopted by children's geographers and on knowledge gained in previous research. The following section reviews the contribution that participatory action research, an approach used by many children's geographers, has made to ensuring the previously marginalised voices of young people are included in the research process.

The intention of this PAR is to both effect social change and to directly involve participants in the research process. As Reason (1998) explains:

'One aim is to produce knowledge and action directly useful to a group of people through research...The second aim is to empower people at a second and deeper level through the process of constructing and using their own knowledge ...'(Reason 1998: 71)

PAR may be defined as:

'research which involves all relevant parties in actively examining together current action...in order to change and improve it...

Participatory action research is not just research which is hoped that will be followed by action. It is action which is researched, changed and re-researched, within the research process by participants. ...it tries to be a genuinely democratic or non-coercive process whereby those to be helped, determine the purposes and outcomes of their own inquiry.' (Wadsworth 1998:1)

One of the key features of the participatory action paradigm is the disruption to traditional power relations associated with the conduct of research. This is particularly the case where research involves children, who in the past, have frequently been subjected to research, rather than being invited to take part as an active member of the research team. This has been described as research for and with children rather than on or about them (Christensen and Prout 2002). Holt's work on the performance of disability in schools frequently questions the research relationships between children and adults. She states:

'It can be argued that research relations have frequently been exploitative, mirroring and reproducing unequal societal power relations between adults and children.' (Holt 2004b:14)

The assumption has often been that adult researchers have been positioned as the 'expert' whilst children have views and opinions that are less valid, uninformed and naïve. However despite the differences in knowledge between adults and children, it does not mean that children are necessarily 'wrong' or have opinions that are less valuable than those of adults (Holloway and Valentine 2000, Skelton 2008). The

reassessment of power relations between children and adults is significant to the development of the post-occupancy evaluation method that aims to involve, and give equal validity to, all user groups in the evaluation process of new primary schools.

A variety of methods are used by researchers who adopt a broadly participatory approach, all of which aim to involve children in the research process and in doing so involve participants in the construction of data (Gallagher 2008). According to O'Kane (2000) participatory action research should involve both participation and action, or 'doing' on the part of children. Children's geographers have been particularly adept at developing 'active' methods for research with young people that examines their relationship with particular places. For example self-directed photography (Aitken and Wingate 1993, Young and Barrett 2001a, Barker and Weller 2003, Dockett and Perry 2005, Einarsdottir 2005, Ross 2007), drawing (McCormack 2002, Malone and Tranter 2003a, Thomson 2005) and the use of maps (Van Blerk and Ansell 2006). Hart (1997) proposes a variety of techniques including drama, puppet shows, model-making. The rationale for using these is based on their 'greater' validity (Cahill 2004) and their improved ethical approach to conducting research with children (Barker and Weller 2003). Thomas and O'Kane (1998) support the view of participatory action research as a way of ensuring both an ethical approach and greater validity.

'Our argument is that the reliability and validity, and the ethical acceptability, of research with children can be augmented by using an approach which gives children control over the research process and methods which are in tune with children's ways of seeing and relating to their world.' (Thomas and O'Kane 1998:336-7)

However, the adoption of a participatory approach does not necessitate the use of a prescribed set of methods. As Pain (2004) explains

‘methodological dogmatism is rare, since the central concerns are appropriateness to context, the depth of participation and nature of outcomes’ (Pain 2004:656)

It has also been suggested that a methodological toolbox encompassing ‘child-friendly’ methods is not enough to ensure real participation. Instead this will come about as a result of ‘methodological immaturity’, (Gallacher and Gallagher 2008) or an attitude that:

‘privileges open-ended process over predefined technique. It does not aim to discover or uncover a pre-existing world, offering instead experimentation, innovation and ‘making do’.’ (Ibid: 513)

Gallagher (2008) furthers the argument, explaining that the adoption of participatory action research often assumes that power relations are one-sided, with the adult researcher holding authority which is then in part relinquished to participating children. However, as Gallagher indicates, power relations are not so clear-cut and, as a reflection on his own research experience reveals, children may wield a high level of dominance, particularly in the spaces where research with children is conducted.

Hill (2006) lends support to this view, in his study into children's attitudes towards participation in research. His findings indicate that children are as varied as adults in the preferences expressed concerning the use of specific methods. Children generally articulated the view that research design should encompass:

- Fairness
- Effectiveness
- Agency
- Choice
- Openness
- Diversity
- Satisfaction
- Respect

As Gallagher indicated, children who are involved in the research process do so amidst a tangle of power-relations. This view is reiterated by Mannion (2007) who recognises the problems associated with PAR with children. He states that research projects that have adopted a PAR framework have frequently emphasised the importance on children 'having their voices heard' at the expense of an understanding of the importance of child-adult relations and the socio-spatial context in which research takes place. Mannion uses the example of a case study of attitudes towards children held by 'child-free' couples to explain that it may not be necessary, in some cases, for children to be directly involved in research in order to examine child-adult relationships:

‘reframing children’s participation research as “research on child-adult relations and spaces” means that children need not be directly involved in the research as respondents or participants.’ (Mannion 2007:413)

The challenge is not to provide a definitive set of ‘fun’ methods in order to access children’s voice for its own sake, but to develop approaches that lead to the direct and active participation of children in the research process that is not tokenistic or intended simply to support an adult agenda.



Figure 1 Hart’s Ladder of Young People’s Participation

Hart’s ‘Ladder of Young People’s Participation’ (Figure 1) is a model of the various levels of involvement young people may experience. The bottom three rungs

describe processes where children are at best involved tokenistically and are at worst manipulated.

In terms of conducting research, tokenism may be asking children their opinions on a superficial level, or not feeding the findings into the overall research results. It may also be the use of inappropriate methods which would yield skewed results. This contrasts with the top levels of the ladder which actively involve children in the research and the creation of the research methods, leading to young people working alongside adults as equal partners in a joint decision making process, where no single group is privileged over the other.

It could be argued that many adults could also benefit from the use of Hart's ladder of participation as a model for their involvement in the research process. Certain groups of adults may be just as marginalised from the research process as children and young people. As Gallagher (2008) indicated, power relations are not always clear cut in the research context and there is a possibility that in the desire to compensate for the exclusion of children from the research process in the past, other groups may be excluded, an issue that was kept in mind throughout the development of the method used for this research.

Participatory action research is particularly relevant for research into relationships with and attitudes towards place. As Pain (2004) indicates:

'participatory approaches lend themselves to research where people's relations with and accounts of space, place and environment are of central interest...PR is designed to be context-specific, forefronting local conditions and local knowledge, and producing situated, rich and layered accounts.' (Pain 2004:653)

Participatory action research can be used to provide a framework to question the nature of relationships to place and is highly contextual. According to Pain it is particularly effective in countering exclusion, providing a conduit for multiple voices to feed into the research. These would include the voices of children, but not exclusively so. PAR should not be seen as a particular set of methods, but an approach which aims to ensure the active participation of all relevant groups, particularly those who have previously been excluded from the research process.

Importantly, it should be stressed that this research aimed to develop a method that accounted for the multiplicity of voices, not only of children. It would be easy for the researcher to neglect the voices of other stakeholders in favour of only listening to those of young people. PAR is one approach that may counter an historical bias in research which has previously favoured the voices of powerful adults. However when examining a context such as the school, which is immensely complex, serving a multitude of functions for a wide variety of stakeholders, it should be remembered that children are one group amongst many. All voices are given equal validity and research methods should be appropriate to the experiences and capabilities of every directly interested party.

Children's geographers have recognised the need to develop ways that enable children to be actively engaged in research. In addition designers and planners in recent years have recognised that children and young people are a marginalised group that have, until recently, been excluded from voicing their views on places that they encounter in their lives. This has also been recognised by educational ergonomists. However, they lack the necessary methods to engage with children. Many designers have adopted a participatory approach in order to involve children

and young people in design and planning processes. The following section will review the ways in which children have been involved in building projects in the UK and the international context.

2.6 Children's participation in design and planning processes

In recent years, particularly following the adoption of the Convention on the Rights of the Child (Unicef 1989), there has been an increase in the participation of young people in design and planning projects. It has been increasingly recognised that the participation of children and young people is not only desirable from a children's rights perspective, but also because it may contribute to the design and build of environments that are enhanced by their involvement. According to Francis and Lorenzo (2002:157)

‘a well-established body of research and practice that suggests that urban environments are best planned with the direct participation of children and youth.’

They have organised participation into the following categories:

- Advocacy – planning ‘for’ children, advocating for their needs
- Romantic – planning ‘by’ children. Children define their own future with little adult involvement
- Needs – a research based approach, addressing children's needs and incorporating them into design
- Learning – children as learners, where participation comes through environmental education, for example learning about architecture.
- Rights – children as citizens with rights that need to be protected.
- Institutionalization – children as adults, planning by children but within adult institutions and institutional boundaries.

- Proactive - 'Participation with Vision' - planning 'with' children. Combines research, participation and action to engage children and adults in planning and design. Children are active participants in process but designers/planners play an important role.

They propose the last approach – proactive, which combines many of the preceding methods, as a way forward for children's participatory design. Crucially, this approach places children as equal partners with adults in the process, recognising that children are one group of stakeholders who should work alongside and in co-operation with other user groups.

Two examples are provided as illustrations as to how proactive participation may work. The first is from Davis, California, USA, where children were involved in the design of a neighbourhood playground in a sustainable community. Several methods were used, including mapping, photography and design workshops with children and parents. Here children and adults negotiated design solutions. The second example was from Empoli, Italy, where city officials decided to use youth participation as a means of improving 'problem' areas. Surveys were carried out in high schools, and four elementary and secondary schools were involved in neighbourhood workshops to discuss and make contributions to the city's development plans. The children's contributions led directly to a re-thinking of the development proposals and greater access for pedestrians was achieved along with the development of a children's urban centre previously earmarked for demolition.

The involvement of children, for example, in the design of cities has been heralded as a means to make urban environments more sustainable and child-friendly (Unicef 2000). Cities that are child-friendly are not built to any particular blue-print; instead they adopt a framework which will allow children to fulfil their rights as citizens.

According to Riggio (2002:45) the UN Special Session on Children (New York, 8–10 May 2002), recognizes children as citizens who have a right to express their opinions and have their views given due consideration. This requires most cities to make institutional, legal and budgetary reforms and to develop a strategy to transform the living environments of children at the family, neighbourhood and city levels. Several countries, including Philippines, Spain, Brazil, the Occupied Palestinian Territory, Colombia, Honduras, Nigeria and Croatia have responded positively and have developed systems of governance through which children and young people may actively participate in city planning issues. Examples of these systems include a competition on Spain where cities are rewarded for good practice in terms of participation (Riggio 2002).

The UNESCO supported project 'Growing up in Cities' seeks ways to respond to the experiences of children and young people within urban communities, including the development of ways to evaluate their environments, to listen to the priorities of young people and to contribute to improvement in their environmental circumstances. The project is multi-national with core sites in Australia, Argentina, England, India, Norway, Poland, South Africa and the United States. Several international examples of successful participation with children arose from the project. One such project was in Canaansland, Johannesburg and involved children who lived in a squatter's camp.

Participation with children in South Africa is considered to be a step towards meeting the need to build a post-Apartheid society as well as beginning to provide solutions for issues including poverty and exclusion. The children who took part in the project participated in a variety of activities including, drawing, participating in interviews, singing, walk-throughs and role play in order to provide the research team with a rich

insight into their daily lives. The results were presented to the local mayor and an action plan was designed to address some of the needs of children in squatter camps and in wider urban Johannesburg. Results from the study indicate that children in circumstances of extreme deprivation can benefit on a personal level by their participation through an increase in self-esteem and the material benefits in improvement of their environment (Griesel *et al.* 2002, Kruger and Chawla 2005).

Other international examples of children and young people's participation in design and planning processes demonstrate the efficacy of a participatory approach. Brazil has, in recent years, extended its concept of participatory budgeting to children. In Barra Mansa, Brazil, elected young people take part in local assemblies, the Children's Participatory Budget Council, where they discuss the neighbourhoods most pressing issues, and contribute to the decision making process. The children's council makes the decisions on how to best spend an annual budget of US \$125,000. This money is targeted for investment in public works and services based on the priorities of the children and teenagers (Guerra 2002, Guerra 2005). This system has proved effective in involving young people in the decision making process and has made efficient use of funding which has been targeted to meet the priorities of young people in the design of their physical environment and in providing appropriate services.

Similarly youth cabinets have been used as part of the decision making process for community planning and design throughout Europe and Canada (Perri 2007). In Hampton, Virginia, high school students are employed as 'youth planners', part of the city's planning department, with the remit to tackle civic design issues that are of particular concern to young people, including the redesign of a new city park, and the redevelopment of a socially deprived neighbourhood (Carlson 2005).

Systems such as youth cabinets and youth membership on local assemblies and committees are examples of participation that is embedded within democratic processes. However, many more young people have been involved in more localised 'one-off' design projects. Design charrettes are an increasingly popular way of involving children in the design process for community design projects and have been used to varying degrees of success. A design charrette may be described as an intensive design workshop, where design experts and stakeholders meet to discuss a new community design project. The aim of a design charrette is for designers to place stakeholder concerns at the centre of any new design. It is vital that the process is transparent, where information is shared and trust is built up. The charrette consists of three stages:

- Information gathering, in which the design team listens to the views of the stakeholders and citizens.
- Design and review, a collaborative process engaging the design team.
- Presentation - The charrette ends with a final presentation of designs and findings.

Many strengths have been identified in this approach to participatory design, including the possibility to imagine possibilities, a holistic approach to problem solving, to gain community perspectives, conflict may be resolved by consensus, can stimulate more general community participation, can provide immediate feedback and reduce time and expenditure (Sarkissian *et al.* 1986). However, problems have also been identified, including the possibility that more vocal stakeholders may dominate the process. Crucially, according to Sarkissian *et al* (1986) if children are involved alongside adults in a community design charrette, their views may well be sidelined and their input limited.

However, design charrettes can be used successfully with children, providing they are managed appropriately and children are treated as equal partners in the process. Gallagher (2004) describes a process where children were directly involved in the design and build of a local playground through a design charrette. Children came up with a design which did not reflect adult conceptions of what a playground should be. Gallagher argues that children can be involved in community projects as advocates for change, but in order for that to happen the process must be free of an adultist political agenda.

Examples may also be found of children's participation in the design and planning of new school buildings. Yanagisawa (2007) describes a series of workshops held with pupils from five schools to progress the design of a new elementary school. The children were given opportunity to discuss their favourite places and elements they would like included in the new school. However, the paper does not say how the information was fed into the design process or whether any of the ideas were incorporated into the design.

Similarly, design workshops were held with young children to allow discussions of a new design for a science park in Kitakyushu, Japan (Yasueda *et al.* 2007). Again, it is not clear how the children's ideas were used in the new design.

The U.K. government has issued statutory guidance supporting a participatory approach, particularly concerning education and educational environments. Section 176 of the Education Act 2002 states that local authorities and governing bodies in schools consult pupils in connection with decisions that affect them, taking account of their age and ability. 'Working Together' (D.F.E.S. 2004b) provides guidance as to what is meant by pupil participation, what the benefits of participation may be, the principles of participation and how to put the principles into practice. Pupil

participation is defined in this document as ‘adults working with children and young people to develop ways of ensuring that their views are heard and valued’ (D.F.E.S. 2003b:2). Participation should encourage the involvement of pupils in their own learning, in the improvement of services and in making a difference to their school and neighbourhood. It should encourage students to make a contribution to a cohesive community and learn to balance rights and responsibilities. Finally participation should develop skills they will need in later life. This also supports the United Nations Convention of the Rights of the Child that states that governments should ensure every child has a say in matters that directly affect them (Unicef 1989).

Recent research has indicated the benefits of consulting students on their education. Consultation has been cited as key to the continuing improvement of teaching and learning, with a focus on the transformative potential of pupil voice (Flutter and Ruddock 2004:138). Participation is a way of ensuring that students feel a sense of belonging, that their voice counts and that their strengths will be recognized (Ruddock and McIntyre 2007).

In a speech in January 2008 Jim Knight, the UK school’s minister, indicated the importance of listening to students when it comes to the design of new schools, stating

‘It is clear that new schools in which students have had input to the process – not as designers or architects, but as users of the building – are schools where the student body and staff feel real ownership. But we want to see more of this. BSF is not something that should

be 'done' to students and teachers and the local community. It is about them and so they must be a part of the process.'

The UK government has given its support to projects that aim to promote participation in school design. Many participatory school design projects have been organised by The Sorrell Foundation. The overall aim of the foundation is to improve the quality of life for young people through good design. Its 'joinedupdesignforschools' programme aims to place students at the heart of the school design process by giving them the role of client, where they work in teams to make a design brief for architects and designers, becoming involved in the development of innovative design concepts. In total, according to the Sorrell Foundation, approximately one hundred schools have been involved in a variety of design projects ranging from small scale refurbishments to whole school builds. Seven hundred pupils have been involved in design teams and ten thousand students involved in whole school projects. According to the foundation's website the outcomes have been positive both in terms of benefits to the physical environment and also on the skills and attitudes of young people involved. However, research by Flutter and Ruddock (2006) was critical of the approach taken, stating that in this case student participation did not reach the top rung of Hart's ladder of participation, and was often tokenistic. They also make the criticism that:

'It may also be the case that short-term initiatives have little influence on the culture and ethos of a school and their impact is not sustained over time.' (Flutter and Ruddock 2006:6)

If design is to provide ongoing support for a positive school ethos, it should be incorporated into a process of continual review and evaluation.

The question this research set out to answer was **‘How can all users be involved in the evaluation of newly built primary schools?’** The development of a toolkit whereby all stakeholders, including children and other marginalised groups, could partake in the evaluation of their environment should be seen as participation in the design process. Design is never complete. Instead it is a continual process where lessons are learned from past successes and failures. Therefore an individual school design may be finished and occupied, but will in the future be refurbished, refitted and modernised. On a wider level, individual schools may provide valuable lessons on design that may be implemented in subsequent builds. Post-occupancy evaluation should form an essential element in the ‘feed-forward’ process, ensuring designers, architects and local authorities use the knowledge of people living and working within the school environment to strive to improve future design and builds. As stressed previously, children have been marginalised from decision making and active involvement in research and design processes. Particular emphasis has been given in the literature review to children to ensure that the methods developed do not exclude them from the process. The inclusion of children’s perspectives should be alongside, not instead of the views of other user groups when answering the research question ‘How can all user groups be involved in the evaluation of newly built primary schools?’.

Sanoff (2005) advocates a ‘community involvement process’ for school design, ensuring that all stakeholders are accounted for. As design consultant in the design and build of four Elementary schools in North Carolina, Sanoff ensured that interviews were conducted with future occupants of the school. Teachers, administrators and students were involved in design workshops to ascertain their needs. Small group discussions were held about particular features of the physical

environment. In these discussions the need for consensus decision making was stressed, which enabled all parties to establish commonly agreed objectives. In this way all views were given consideration and no one group were privileged over another. Sanoff and Pasalar (2001) developed this approach as 'A Visioning Process for Designing Responsive Schools' which advocated the involvement of the wider community. Sanoff states:

'Building a responsive school requires those who actually dwell in the space be part of the planning process – be they students, faculty or community members. Not involving everyone can cripple the outcome for years to come' (2001:6)

There is a clear precedent for involving the entire community in the design of schools. Sanoff also recognises that post-occupancy evaluation is a key element in the design and build process of schools, particularly in the light of new methods of teaching and learning. Critically Sanoff states:

'As users of the school building, teachers, administrators, students and parents, would be the best evaluators of the physical environment.' (2001:7)

All stakeholders should be given opportunity to be involved in evaluation of school environments. The question, which is at heart of this research, remains however as to the best methods to use to ensure everyone is given the appropriate means to do so.

The following section is a review of currently available post-occupancy methods, with particular reference to schools.

2.7 Post-Occupancy Evaluation Methods

It has been established in the first section of this review that the built school environment has clear and profound effects on the learning and social interactions of children as well as influencing the ability to deliver the curriculum for teachers. Evaluation should be part of the ongoing process of the design. This is particularly relevant at the time of the research where it was planned that all secondary schools and half of primary schools in the U.K. were to be rebuilt by 2023 under the Building Schools for the Future and Primary Capital programmes. Schools that were built during the early stages of the government initiatives can provide valuable insights into what is appropriate in the design of school buildings so as to inform the majority of schools yet to be built.

Until recently POE has not been seen as a necessary part of the design and construction of new buildings (Douglas 1994). However, there is now an increasing body of literature concerned with the necessity of post occupancy evaluation as part of an ongoing process of design. POE is defined as “the process of systematically evaluating the degree to which occupied buildings meet user needs and organizational goals” (Lackney 2001:2). A POE provides “an appraisal of the degree to which a designed setting satisfies and supports explicit and implicit human needs and values for whom a building is designed” (Friedman *et al* 1978:20). POE has also been described as a way to answer two questions: how is a building working, and is this as intended (Leaman 2003). The assessment of whether a building is functioning according to the intentions of the designers is a key concept (Horgen and Sheridan 1996). It has been suggested that POE is a means of improving the quality and sustainability of buildings (Bordass and Leaman 2005a) and should become a routine part of the design process (Bordass and Leaman 2005a, Way and Bordass 2005, Bordass and Leaman 2005b).

The need for effective POE in the educational setting has also been recognised (Lackney 2001, Sanoff *et al.* 2001). It should aim to assess the extent to which the building supports the educational goals of the school by measuring its physical appropriateness to its function (Hawkins and Lilley 1998). POE should “describe, interpret and explain the performance of a school building” (Sanoff *et al.* 2001:7). However building assessment and evaluations have rarely examined the relationship between the physicality of the school and the educational goals of the establishment (Lackney 2001).

There are several post-occupancy evaluative tools available in the UK and internationally. A review of these will be presented and will achieve the first objective of the research, to assess existing methods of evaluation. Several post-occupancy evaluation toolkits have been designed specifically for schools. For example “Schoolworks” have developed a tool which has been piloted in secondary schools (Schoolworks 2004). However, the literature review revealed that there is a gap in available POE toolkits, with none being designed specifically for the evaluation of primary schools in the UK, and none that account for the voices of all stakeholders.

Some are more useful for the evaluation of commercial office buildings: for example the Building Use Study. Approximately twenty primary schools countrywide have used, a questionnaire available commercially from Building Use Studies Ltd. However the survey is generic, not specific to the primary school context, which is problematic. For example the survey asks questions such as “Do you sit next to a window at your normal workspace?” which is inappropriate to ask primary school teachers who constantly change the place where they work as they move between individual and groups of children. Neither is the questionnaire appropriate to use with children. The language used is too complex for many children to understand, for

example, “How do you rate the usability of the furniture provided at your desk or normal work area?” The questions do not address the ways children interact with the school environment and do not take into account, for example, the outside space, so vital for the developmental education of young children, (Malone and Tranter 2003a, Tranter and Malone 2004).

The Design Quality Indicator, developed by the Construction Industry Council, is a more comprehensive means of evaluation, asking questions on functionality, build quality and impact of school buildings. It does not however fully interrogate the specific functions of a school. For example it asks only two questions on teaching and learning – “Teaching spaces are adequate and appropriate for the curriculum and organisation of the school”, and “The building enhances the activities of teaching and learning”. Although these questions begin to address the issue as to the level of support the building gives to the teaching and learning, it does not unravel the complexity of the processes involved. For example it does not take into account the various types of teaching spaces, classrooms, libraries, small group rooms, nurture rooms etc. Neither does it distinguish the differing requirements of the many user groups. It is deeply concerned with aesthetic considerations, with a whole section devoted to the “impact” of the building. Although aesthetics are important they arguably should not take precedence over a building’s functionality or be at the expense of the providing a positive school experience for children.

Neither of these evaluative questionnaires takes into account the very particular needs of children, or attempts to gauge their opinions or judgements on the school building.

Outside of the UK, post-occupancy evaluation methods have been developed for the evaluation of schools, particularly in the US. Sanoff *et al* (2001) sets out an

approach for post-occupancy evaluation of K-12 schools (equivalent to primary and secondary education in the UK). This uses several methods: the six factor school building checklist, the school building observation form, the school building rating scale, photo questionnaires and a 'wish poem'.

The six factor building checklist focuses on what Sanoff considers to be the key elements of school design: context, massing, interface, way-finding, social space and comfort. Each aspect of the design has a set of questions, which the respondent must rate on a scale ranging from very unsatisfactory to very satisfactory. Each factor is then given a score. For example, the section on massing consists of the questions in Figure 2.

<p>'Factor 2 - Massing: Buildings are organized in form into some type of massing. Massing of the parts gives both form and meaning as well as variety to the building.</p> <p>1- Viewed from the outside, do the building parts integrate well with each other to form pleasing appearance?</p> <p>2- Do the subdivided parts of the building appear to have a function that is easy to identify?</p> <p>3- Is it clear what various parts of the building might mean to visitors?</p> <p>4- Are the various parts of the building planned carefully in relation to one another and to the characteristics of the site?</p> <p>5- Does the relationship between the parts of the building make it appear as one unified structure?</p> <p>6- Does variation in the massing provide interest and variety?'</p> <p>Discuss the subdivision of the building into identifiable parts and how successful the concept of massing has been employed.</p>

Figure 2 Section on 'Massing' from Six Factor Building Checklist

As this example shows, the six factor building checklist uses language and terminology that presumes an understanding of complex design concepts. It would prove difficult for an adult without an understanding of design to answer the questions in a meaningful way. Most children would find the task virtually impossible. The second part of the toolkit is the School Building Observation Form. It is comprised of the list of statements in Figure 3 which the participant must agree or disagree with

- 1- Building is neat, clean, and in good repair. There are few, if any, signs of vandalism or graffiti.
- 2- Student work is displayed on bulletin boards, walls, tables in classes and other areas throughout the building.
- 3- Pictures and displays depict various racial and ethnic groups.
- 4- Pictures, posters, and displays show both boys and girls engaged in a wide variety of activities, for example: girls as doctors, policewomen, construction workers; boys as nurses, social workers, secretaries; girls playing baseball and boys cooking.
- 5- Announcements are posted by students and staff about activities and concerns.
- 6- The building itself is flexible, including some large open spaces, some small rooms. Some spaces are multifunctional.
- 7- Furniture throughout the school is movable.
- 8- There are quiet places for individuals, pairs, and groups of students to withdraw, relax, and think, such as student lounges or reading lofts.
- 9- There are identified places where students can be noisy and engage in physical activity.
- 10- There is plenty of room in corridors and classrooms for movement from one place to another.
- 11- There is outdoor space for projects such as science gardens and building projects. It is being used.
- 12- Students contribute to the upkeep and appearance of the school. For example, they may build furniture, clean their own tables in the cafeteria, pick up trash, decorate bulletin boards.
- 13- There are doors or curtains on the stalls in the bathrooms and dressing rooms.

Figure 3 School Building Observation Form

Although the questions begin to address issues around the ethos of the school and the various uses spaces within the school might have, it does not provide a full picture of the school environment. Again, the questions may not be appropriate for students, particularly young children. Neither are they specific to user groups, for example determining whether the environment is suitable to facilitate their work.

Photo-questionnaires, the next part of Sanoff's POE ask participants to examine images of the building and choose words that describe it from the list of antonyms in Figure 4.

Interesting or Boring
Dynamic or Static
Repelling or Inviting
Novel or Common
Unpleasant or Pleasant
Friendly or Unfriendly
Dislike or Like

Figure 4 List of antonyms from Sanoff's photo-questionnaire

Although the photo-questionnaire may reveal some of the attitudes of the participant, again it is not appropriate for use with children, neither does it fully interrogate the reasons for the answers given, or address issues of functionality or 'fitness for purpose.'

The final part of Sanoff's POE is specifically designed for children. The 'Wish Poem' is designed to allow children to imagine what they would like in an ideal school building:

'A wish poem is an approach that encourages students, teachers and parents to fantasize about their dream school through an open, yet structured process' (Sanoff, Pasalar *et al.* 2001:20)

The 'Wish Poem' is simply a series of statements which begin with the phrase 'I wish my school....' Although this does allow for children of any age or ability to express their opinion about an idealised school design, it lacks structure, despite Sanoff's statement to the contrary. The attention of children is not directed towards any particular aspect of the school design and at worst appears patronising and tokenistic. It is not adequate to simply ask children what they would like. Questions

need to be asked concerning specific aspects of how the school building can make a positive contribution towards their learning and well being.

Recently the Centre for Effective Learning Environments have published an online questionnaire for staff and students to contribute to an international pilot study into the evaluation of learning environments (OECD 2009). The questionnaires are wide ranging and comprehensive. However, the staff questionnaires are only directed at teachers, not accounting for the experiences of other members of staff. The questionnaire aimed at students is not suitable for primary school children due to its need for participants to have a high level of reading and comprehension ability. For example 'It is easy to move along the same floor (*i.e. there are no congested corridors or changes in the levels in the building, which make moving around difficult*)'. And later 'The routes or pathways around the **inside** of the building are well signposted or easy to identify for visitors or newcomers.' Although most students in older year groups in secondary schools would be able to understand and answer the questions, it is unlikely that younger children and children with limited reading ability would be able to do so.

The focus of the student's questionnaire is entirely on the internal environment, with limited questions on the ability of the environment to support learning and no acknowledgement of the need for the building to accommodate the social or play needs of young people. Although it would be useful for evaluating the secondary school environment, its application would not be appropriate in primary schools.

The Council of Educational Facility Planners International have also produced a questionnaire for elementary school post-occupancy evaluation (CEFPI 2004). The questionnaire consists of a set of sixty statements about the school built environment which are scored on a Likert scale. Although there are some questions about the

ability of the environment to support learning, they do not fully question the functionality of the school. As in the previous post-occupancy evaluation methods the only staff this questionnaire is suitable for is the teaching staff. No provision is made for other adult stakeholders to voice their opinions. Again, the questionnaire is entirely unsuitable for students, particularly young children.

California's Coalition for Adequate School Housing has also produced a Facility Inspection Tool (CASH 2007). All facilities in California must use this method for establishing whether schools are in 'good repair' as defined in the state's statutory codes. The FIT was established in response to the 'Williams' lawsuit in 2000 where 100 students filed a lawsuit against the state of California and state educational agencies. Amongst other grievances, the basis of the lawsuit was that students in California did not have equal access to 'safe and decent' school facilities. As a result schools are compelled to complete the FIT checklist. However the toolkit is only concerned with assessing the safety of the physical environment, and whilst making a detailed appraisal of items such as fire safety, structural damage, hazardous materials and pest infestation, it does not attempt to evaluate the role of the building in providing an environment that is designed to support the student's education. Neither does it seek to consult any of the stakeholders of a school, relying instead on the experts within the school maintenance department.

Other examples of methods of post occupancy evaluation of schools, from Sao Paulo (Ormstein *et al.* 2009) and the Washington DC and Virginia districts of the USA (Earthman and Lemasters 2009) have similar flaws; they do not afford adequate or appropriate opportunities for all stakeholders to be meaningfully involved in the evaluation process.

Despite there being several methods of POE available, they do not answer the question that this research set out to answer, namely 'How can all user groups be involved in the evaluation of newly built primary schools?'

Most POEs are inappropriate for all users, or do not fully examine the function of the school building in terms of teaching and learning. Vitally, even when children are included in the evaluation process, other marginalised groups are not.

2.8 Conclusion

The review has examined the contribution educational ergonomics has made to understanding the school environment, helping to achieve the second objective of the research, to establish the key areas and issues the method should evaluate. However the largely quantitative approaches adopted by ergonomists have inhibited the adoption of more qualitative approaches, which would be more fitting for educational ergonomics, with its stated emphasis of putting the pupil at the heart of the design of educational environments. Other disciplines use methods which use a more participatory approach to understanding environments. Recent developments in human geography and specifically children's geographies have adopted participatory action research as an approach, using methods designed to directly involve the participants in the research and account for a multiplicity of voices. Post-occupancy evaluation is used within the design community to evaluate buildings subsequent to their occupation. All of these elements were considered to be of value in informing the development of the methodology developed to answer the research question and to meet the overall aim to develop a post-occupancy evaluation method that takes into consideration all user groups.

The post-occupancy evaluation method developed to address the research question benefitted from a synthesis of the approaches taken in the preceding literature through an understanding of physical effects of the school environment on children and adults gained from educational ergonomics and the holistic, participatory approach used to examine relationships with place adopted by many children's geographers. The POE designed to address the research question, asking all stakeholders about the physical comfort of the school environment, whilst endeavouring to understand its emotional aspects. The review and critique of existing methods of POE met the first objective of the research, to assess existing methods of evaluation. This coupled with the perspectives from educational ergonomics and participatory methods signified a gap in the available tools for post-occupancy evaluation.

The need for a toolkit that accounted for all stakeholders was indicated, as was the need for an approach that was based on the users own experience of place. The empirical research therefore was designed in two phases: the first endeavoured to further examine the key areas and issues the method should evaluate through an in-depth examination of three case study schools. In this, children and adults were asked to participate in an evaluation of their schools through interviews, photographs, and drawing. This directly impacted on the second stage of the research and, along with knowledge gained from the educational ergonomics literature, informed the key issues that the post-occupancy evaluation toolkit aimed to address in the second stage of the research. A full account and justification of the development of the method is provided in the following chapter.

Chapter Three: Research Methods and Philosophical Underpinning of the Research

3.1 Introduction

The undertaking of any research project requires the consideration of the appropriateness and validity of the methods and techniques that are to be adopted. Issues for consideration are the type of data required, how is to be gathered, what methods of analysis are adopted and, of primary importance at all stages of the development of a method, whether the methods used are the most appropriate to address the research question. The aims of this chapter are to provide a rationale for the method that was developed to address the research question. This will include an elucidation of the philosophical position underpinning the research and that has informed the selection of methods.

Secondly this chapter will provide a detailed account of the research design throughout the study: the planning stage; case studies in pre-1990 primary schools; development of the post occupancy evaluation toolkit and its implementation.

Finally other issues including ethics, validity and positionality will be explored.

3.2 Philosophical Grounding of the Method

This section will provide a descriptive account of the ontological and epistemological approaches adopted throughout the research.

The research set out to answer the question ***How can all user groups be involved in the evaluation of newly built primary schools?*** By seeking to find ways to answer the specific research question the researcher should engage with philosophical questions relating to ontology, or the nature of social entities or

‘objects,’ and epistemology, or the very nature of knowledge itself and how it is constructed (Hughes 1990). By selecting some methodological approaches and rejecting others the researcher will, either explicitly or tacitly, position him or herself in relation to a particular epistemological standpoint. If the issues of ontology and epistemology are side-stepped then the researcher may not be able to fully justify the methodology. It is therefore essential that the researcher answers these philosophical questions head-on and tackles the questions regarding the nature of social entities and their ‘existence’ and which types of knowledge about them are valid. The position taken will inform the methods selected in order to answer the research question.

This is particularly the case when the research is in the applied social sciences arena, where there has traditionally been a polarisation in philosophical positions which may broadly be termed positivism and constructionism. Although methods are not assigned to philosophical positions it has often erroneously been asserted that certain methods may only be used by those researchers reflecting a particular epistemological standpoint. For example traditionally positivism has been allied to quantitative methods, conversely it has been postulated that constructionists may only use qualitative methods such as ethnography. The differences in the two oppositional approaches to social research has been termed an ‘epistemological chasm’ (Walby 2001, Olsen 2004) or even a ‘paradigm war’ (Tashakkori and Teddlie 1998). However, it is in fact perfectly feasible for example, to use quantitative methods to examine attitudes towards a particular social situation in order to highlight its cultural construction.

It has been proposed that the methodological differences associated with the apparently antithetical epistemological positions are insurmountable and that

methods adopted should conform to one or other stance (Smith and Heshusius 1986, Silverman 1993). In other words the researcher should use either qualitative methods or quantitative.

In recent years the social sciences have been able to synthesise the two apparently incompatible views in order to adopt a less dogmatic approach to research and the selection of methods. For example the concept of 'triangulation' (Olsen 2004, Hemming 2008), where the veracity and validity of the research is tested through a diversity of data-types or methods, has led to the adoption of a mixed method approach in many pieces of social science research.

When conducting research the researcher brings to it certain ways of 'seeing' or understanding the world. They may make assertions about the nature of 'existence' and objects, processes and interactions are understood. The standpoint adopted in this research is that of constructionism.

Constructionism has been defined as taking the view that

'all knowledge, and therefore all meaningful reality as such, is contingent upon human practices, being constructed in and out of interaction between human beings and their world, and developed and transmitted within an essentially social context' (Crotty 1998:42)

Meanings about people, places, objects and processes are 'constructed' rather than 'discovered.' Therefore there is no meaning without a human mind to interpret it. A positivist stance argues for objectivism, which is the view that each object has inherent meaning external to the conscious human mind. For the constructionist, however there is no 'objective' truth contained within social entities, instead truth is

contingent upon the subject. That is not to say there is no 'real', external world, a tenet of naïve idealism, a position which is sometime confused with constructionism. Where the idealist would argue that there is no external world separate to the consciousness, the constructionist stance is that there are 'real' things in the world, but our interpretations ascribe meaning and significance to them.

Meaning is therefore given by human beings through their interactions and everyday encounters with the world. This may vary radically across time, location, cultures, groups and individuals. For example children's geographies have taught us that children and adults may understand place differently and therefore attribute different, even oppositional meanings to a place. The researcher who adopts a constructionist view will attempt to allow alternative interpretations and meanings of the social object. One of the aims of the POE toolkit was to facilitate the audibility of alternative voices concerning the nature of the real world context of the primary school; voices that have the potential to contest dominant ideas on school design and educational discourse. The constructionist standpoint affords a liberating approach to research, allowing a reconfiguring of accepted norms and a contesting of 'common-sense' notions of social categories (Parker 1998). The rejection of grand overarching meta-narratives afforded by postmodernity, as reflected in the constructionist position, places importance on hearing a multiplicity of voices in social research, rather than only those raised by dominant discourse (Burr 2003).

According to Foucault, meaning is constructed through discourse, in fact nothing has any meaning outside discourse (Foucault 1972). Discourse has been defined as 'The framework of thinking in a particular area of social life' (Giddens 2001:687). Our understanding of the social world and our life experiences are mediated through discourse. For example media representations of urban children as deviant and

'other' become accepted as 'common sense' and therefore true; it forms part of a particular discourse on children, shaping our sense of what constitutes an acceptable and appropriate childhood.

Foucault did not argue that there is not an external reality, but that we can only make sense of it through discourse. Discourse, according to Foucault is not solely concerned with language, although this is important, but through social practices. So, discourse comprises both what we say, and what we do. Discourse affects the way we act towards others (Burr 2003). The theories of Foucault are significant to this research when we consider the ways in which educational provision has been constructed through dominant discourses. It is also significant in a consideration of the dominant discursive conceptualisations of children, for example as incompetent, as human becomings rather than human beings and as either 'angels' or 'devils' (Holloway and Valentine 2000). This research aimed to make provision for all voices in the evaluation of new school buildings, therefore rejecting the idea of children as incompetent. Instead their voices were viewed as of equal value to those of adults.

The adoption of a constructionist standpoint has informed the development of the methodology throughout the research. Stakeholders who have previously been excluded from the research process were given the opportunity to have their views accounted for. Children, for example, have frequently been marginalised from the research process, having been regarded as 'other', subjugated and stigmatized, regarded in opposition to the dominant adult voice. Throughout this research 'other' voices, such as children and less powerful adults, were regarded as being of equal worth to those of more powerful stakeholders, such as teachers or head teachers. The following section will explain how the method was specifically developed to account for 'other' voices in the research.

3.3 Research Design and Methods: Planning stage

The previous section outlined the philosophical premise of the research, including an explanation of the constructionist approach.

This section will provide a detailed account of the planning stage of the research, prior to the implementation of the empirical work. This will include an explanation and rationale for the methods adopted.

The research was conducted in five phases

1. Desk Research
2. Case Studies conducted in three pre-1990 primary schools
3. Development of a post-occupancy toolkit for primary schools
4. Implementation of the toolkit
5. A Critical Reflection on the Method

Coventry City Council endorsed the project from its inception and provided practical assistance throughout. The support from the council helped during the early planning stages by providing contacts with schools and reassured potential participants as to the validity of the research. Throughout the planning stages the researcher endeavoured to consult adults and children about the appropriateness of the methods used. These were then adapted according to feedback. This was achieved by conducting small pilot studies and focus groups at the early stage of project planning. Here children and adults that were not connected with the target schools were shown the questionnaires and schemes of work. The ensuing discussions helped ensure the final survey was appropriate in terms of language and questions asked of each of the stakeholder groups.

By consulting the views of children and other stakeholders in the early stages of the research method design, it took into account the standpoint of the research participants, helping to eliminate the potential risk to psychological harm.

3.4 Methods Adopted in Empirical Research Phases

The primary consideration in the design of any research project, including the selection of methods, must be to design an approach that will best answer the research question. In this case ***How can all user groups be involved in the evaluation of newly built primary schools?***

This question led directly to the development of the methods used in this research.

The methods were developed sequentially, with the findings from an initial set of case studies combined with a review of the model brief adopted by Coventry City Council in order to produce the post-occupancy evaluation toolkit. This in turn led to the implementation of the toolkit in five primary schools built to Coventry's model brief in order to evaluate their success or otherwise. The results from using the toolkit were then assessed to examine the extent to which all user voices can contribute to a post-occupancy evaluation and subsequently provide input into design guidelines. The following will elucidate the methods adopted in the empirical stages (phases two and four) of the research.

3.4.1 Phase Two: Case Studies in Three Representative Pre-1990 Schools

Rationale for the Selection of the Case Studies

Sampling

It was impossible within the scope of this research to conduct in-depth qualitative research with every child and adult who attend primary schools in Coventry,

therefore a number of schools were selected as a sample. According to Wilmot (2004:3):

‘With a purposive non-random sample the number of people interviewed is less important than the criteria used to select them. The characteristics of individuals are used as the basis of selection, most often chosen to reflect the diversity and breadth of the sample population.’

Schools who participated in this stage of the empirical research were selected using a purposive sampling strategy. They represented a wide breadth of schools in Coventry. They were selected from a variety of locations within the city, reflecting a diversity of socio-economic variables. They also varied in size and physical layout. According to Devers and Frankel (2000:264) ‘Purposive sampling strategies are designed to enhance understandings of selected individuals or groups’ experience(s)’ Miles & Huberman (1994:34) explain that three types of cases are most useful when selecting purposive samples:

- typical cases (i.e. those who are “normal” or “average” for those being studied);
- “deviant” or extreme cases
- “negative” or disconfirming cases.

The case study schools were selected as representative of ‘typical’ schools in the West Midlands. Two of the selected schools were initially built on the same open plan “footprint” used commonly in the 1970s. The schools had both implemented changes to the school layout and had dealt with problems associated with open plan design by installing partition walls. The third school was built in the 1950s from metal sheets used in the production of aircraft and had gained listed building status. It had

recently had a new nursery and reception area built on to the school. This school was selected because it was not built according to the open plan design principles of the other case study schools. This school was built with a more traditional layout with much larger individual classrooms. Although the design and materials used in the build of this school were not common in the UK as a whole, there are several schools in the Midlands built from the same material to a similar design. It was felt that a comparison between the two very different layouts might reveal contrasting attitudes towards the school building.

Although diverse schools were selected to represent 'typical' Coventry schools built prior to 1996, there were issues with the selection of individual children who participated in the research. This will be discussed in depth later in section 3.4.

Methods

Ethical considerations were met at all stages of the research design. Consent was sought and gained from the parents or legal guardians of all children involved. (See section on ethics for full explanation.)

The research methods used were qualitative, utilising participant observation, in-depth interviews, child-led photography and drawings in order to reveal issues with the school design pertinent to children and adults. These methods were chosen to provide a rich insight into the various ways in which this place was perceived and experienced by all users and whether their needs had been adequately accounted for during the design and build. A conceptual framework was developed based on initial observations. The key themes that arose from an analysis of the initial data related to behaviour, learning, teaching, play, interaction and safety and security. This framework informed the semi-structured interviews that were conducted with

children and staff. These interrogated further the extent to which the building was fit for the purposes of contemporary education.

The case studies used methods conducted in three phases:

1. Observations of children and staff
2. Production of photographs and drawings from children
3. Semi-structured interviews with staff, and interviews with children based on observations and images they produced.

Observations

One day a week was spent in each of the schools for the duration of the spring term, observing and informally talking to children and staff about the school. Time was spent in classes from all years, from reception to year six. Observations of the children and staff were made and recorded through the keeping of detailed diaries. Specifically the observations took place during lesson times where a full range of the curriculum was observed including literacy, numeracy, ICT and art lessons.

As well as the formal aspects of curriculum delivery, detailed notes were made as to how children interacted with the space they were in throughout the lessons during both formal lesson delivery and at less structured times, such as between lessons or moving between the classroom and the hall for assembly. It was also observed how children interacted with each other and with adults at different times in different places.

Observations recorded specific examples of how the built environment impacted on the ways children and staff worked, played and interacted at all times of the school day. For example in the classroom at formal learning times in a range of lessons and during breaks when the impact the playground had on types of play and adult supervision was observed. These observations then formed the basis of interview

schedules for adults and children that were used to further investigate the impact of the environment. Staff were also observed to examine how they engaged with the space of the classroom and how this affected interactions with children. These observations were then annotated and coded. A detailed account of the analysis of data will be presented in section 3.4.2.

Production of images

Following the initial observation stage, twenty-four children were asked to produce drawings and photographs of their schools. The children were chosen because of their membership of school council. School councillors in all three schools were elected by members of their class. The sample group consisted of thirteen girls and eleven boys from the all primary year groups. They also reflected a wide range of academic ability, although there was a tendency for the majority of the sample to be considered amongst the highest academic achievers.

Photography is well established as an effective method when conducting research with children (Aitken and Wingate 1993, Orellana 1995, Burke 2005) and has recently been cited as particularly effective in educational research, (Fischman 2001). The photographs were used as a prompt for these interviews. Some children drew pictures of places of significance to them in the school environment, which they then discussed and explained. This “layering” of interview, image-making (drawing or photography) and further in-depth interviewing is a technique that has proved very valuable in previous research (Aitken and Wingate 1993, Newman *et al.* 2006).

Interviews

The production of images by children was followed up by a two-week period during the summer term when in-depth interviews were conducted with the children and staff. Interviews were conducted with ten members of staff from the schools and

twenty-three children, who had participated in the image-producing stage of the research. One boy was unable to participate in the interview stage due to his absence from school.

Interviews were tape-recorded, transcribed and coded into themes that appeared recurrently throughout the interviews. The interviews with staff took a semi-structured approach and lasted approximately 30-45 minutes. Interviews with children were less structured and child-led usually lasting approximately an hour.

Staff interviews were based on the themes that emerged from the observation period.

Interviews with children focused on themes from the observation period and discussions of the places of significance to them in the school which they chose to photograph or draw.

3.4.2 Analysis of Case Study Data

The data from the case studies was analysed thematically. Thematic analysis is the search for themes central to the research issue and involves the systematic and detailed reading of interview transcripts and observations. The process seeks out patterns within the data and the emergent themes become the categories, or codes, for analysis.

Categorisation, or coding, enables the researcher to group pieces of data together that may be regarded as being of a 'similar type'.

In practice this approach results in the meticulous reading and re-reading of data in order to establish lists of recurrent themes and patterns. This involves developing an intimate knowledge of and 'immersion' in the data. The interviews and observation diaries were read and re-read many times to gain intimate knowledge of the data and

to explore potential themes and topics. Throughout this stage of the data analysis, photocopies of the research diaries and interviews were annotated. Here key issues and recurrent themes were underlined and highlighted and notes were made in the page margins. The notes recorded ideas and observations concerning the data and as the process continued patterns in the data were observed in the form of recurrent issues and areas of concern.

This led to the creation of an initial set of concepts which were used for further codification of the data. These early, general ideas may be called 'middle-order' categories (Becker and Geer 1982). There was a fluid movement and interaction between the data and these initial 'middle-order' categories. For example in the initial stages, the data revealed the necessity for children to socialise. The data was re-read to look for evidence of socialisation, however as the researcher became fully immersed in the data, it became clear that this initial concept needed to be further refined due to the differences in interactions between children in a formal setting and of those in an informal situation. The initial concept therefore was refined into two categories: interaction and play.

The initial 'middle-order' stage was refined until a set of categories were developed which would be used to code the data in the next stage of the analysis. The categories were:

- Behaviour
- Learning
- Teaching
- Play
- Interaction
- Safety and Security

Once the categories had been established, the next stage of the analysis was to go back to the original data and assign categories to each relevant part of the data, a process known as 'coding'. Each interview and research diary was photocopied six times, once for each identified theme, and placed in a folder which related to one theme. Each folder contained a complete data set. They were then re-read and the text pertaining to the relevant theme was highlighted manually. This method ensured 'inclusive' categories, i.e. a piece of data could be assigned more than one category. For example some data about poor behaviour on the playground was highlighted in both 'play' and 'behaviour' categories.

This method also allowed for thematic links to be established from data from individual schools, but also for relationships in the data to be examined between different schools.

Although computer software is available for this process, for example Nvivo, it was achieved manually due both to the financial implications of purchasing the software and the researcher felt it necessary to become fully conversant with the 'hands-on' methods before having to acquire the further ICT skills necessary.

3.4.3 Sampling: A Critical Reflection on 'Diversity of Voices' in the Case Studies

The process of conducting research is one of continual reflection. As the research project proceeded questions arose as to the diversity of voices that were accessible through the conduct of in-depth interviews. Despite having interviewed the majority of teachers in the three schools, on reflection it became apparent that these interviews only represented the views of one relatively high-status group of stakeholders. The conclusion was drawn that the next stage should be to develop a method that would access other adult voices, many of whom have been excluded

from evaluations in the past, such as administrators, cleaning staff and lunchtime supervisors.

The nature of children's voices that were represented in interviews was also brought into question. Any research project involving interviews with children in the school setting relies on a 'gatekeeper' usually the head teacher, to allow access to children. In all cases the children who were invited to participate in the research were members of the school council. Although the children were elected by their peers to represent them, they were all children who were considered 'sensible', well behaved and hard working by adults within the schools. They were also compliant with school rules and regulations. All schools had an expectation that members of the school council would represent the school in an 'appropriate manner.' The children were therefore representative of an 'ideal' type of school child, who reflected adult expectations and did not challenge adult authority.

The interviews were also conducted within the space of the school, during the school day. The researcher concluded that the participating children may have felt an expectation, consciously or unconsciously, to voice the views that would represent those of adult authority within the school. For example during interviews children consistently said that they liked their teachers and did not like it when some children were 'naughty'. In order to develop a method of evaluation that would account for the views of all stakeholders, including children who may feel disaffected and disenfranchised and adults that have previously been excluded from the design process, it was imperative to develop a method that would accommodate all voices.

A post-occupancy evaluation was developed, specifically designed for the primary school environment and targeted to each group. This would potentially allow every stakeholder within the school to voice their opinion and feed into the design process.

This would avoid many of the problems associated with having access to only a small number of children and adults.

The following section will detail the development of the post-occupancy evaluation toolkit.

3.5 Design of the Post-Occupancy Evaluation Toolkit

3.5.1 Whose voices are privileged?

In designing the toolkit the premise was taken that no one set of voices would have overall greater value than another, rather the toolkit would be specifically designed so that issues pertinent to each user group would be addressed. For example it would be unreasonable to ask lunchtime supervisors as to the suitability of the learning environment, equally it would be irrelevant to ask teachers about the design of the school kitchen. All voices are regarded as equal value providing they are asked questions that are relevant to their roles in the school. It would be a mistake to assume that one set of stakeholders, for example those in higher status occupations, would generally have greater significance than another in all contexts. The decision was made to ask questions that were specifically addressed to the role of each stakeholder, thereby privileging the views of each stakeholder group in the context of their experience and expertise. For example the voices of kitchen staff would be privileged over those of other groups when an evaluation of the kitchen and dining rooms was made.

Where several groups of stakeholders shared an interest in a particular area, for example the playground, all stakeholder views were evaluated and considered as being of equal worth.

It is beyond the remit of this thesis to provide an 'ideal' school design, where the needs of all stakeholders would be met. This is the challenge for the designer. A

good designer should not to listen to one set of voices alone, but to listen to the gamut of stakeholders and design an environment which meets the needs, as far as possible, of all concerned. An understanding of the needs of all users is central to successful design and this toolkit was intended to provide as full a picture as possible of how present day schools in Coventry meet those needs.

Chapter Five will set out the results from all relevant stakeholders. The intention is not to resolve conflict between stakeholders, but to develop a method that will indicate where variance in needs occurs so that future designers may build upon the knowledge gained in order to provide suitable design solutions. Equally, as indicated in the results, there are many occasions when the majority of the range of stakeholders are in agreement about particular issues, again pointing the way forward to future designs which should account for all voices.

3.5.2 Early Development Stages

Throughout the development stage several decisions had to be made as to the exact format the questionnaire would take. It was determined that because the questionnaire intended to assess the stakeholder's judgements and opinions a Likert Scale would be adopted. This gives a series of statements about the school. The respondent then marks on a scale the extent to which they agree or disagree with the statement. It is important that the statements are neutral, that is not leading in any way. It is also important that the statements are clear and that they do not ask two things at once. For example to ask respondents to decide whether they agree or not with the statement "the classroom is noisy and bright" would be unacceptable.

Because there is sometimes a tendency for respondents to agree with statements in a Likert scale, approximately one third of the questions were phrased in what may be termed a "negative" way. For example the question "the dining room furniture is easy

to set up” was followed by the next question “the dining furniture is difficult to store away”. This ensured that respondents were less likely to always agree with the statements if it meant agreeing to a negative aspect of the school, or vice versa (Boynton and Greenhalgh 2004).

It was also decided at this stage that a paper questionnaire would be more appropriate than an electronic version. After discussions with the head teachers of the schools it was discovered that many of the stakeholders asked to complete the questionnaire, (such as cleaning staff, kitchen staff, lunchtime supervisors as well as parents in schools within deprived socio-economic catchment areas) had limited access to the internet and would therefore be unlikely to complete the survey. Teachers also said that they would be more likely to fill in a paper copy as this could be done in small steps in informal settings, such as during a coffee break or at home. In order to develop the statements for the questionnaire, each part of the model brief was worked through systematically and viewed in conjunction with the findings from the case studies thereby producing a set of questions that addressed whether the new buildings supported the needs of all stakeholders, including the. This involved taking each part of the school building as described in the model brief and interrogating whether the end building met the intentions set out in the model brief. Six adult questionnaires were devised. This was to address specific questions appropriate to the various stakeholders. There were separate questionnaires for

- head teachers, deputy and assistant head teachers;
- teachers and teaching assistants;
- administration staff;
- maintenance staff;
- kitchen staff and lunchtime supervisors

- parents

As well as evaluating the building it also provided a valuable opportunity to reflect on the process of designing the school, for example whether there was sufficient user involvement in the process or whether users feel the design was improved by their involvement. Each of these questionnaires asked questions specific to the respondents' role in the school. The head teachers' questionnaire asked about the management of the school. The teachers' questionnaire focused on the extent to which the school supports the curriculum and their teaching philosophy. Other members of staff were asked about the suitability of the school design for their particular job. All questionnaires asked about physical comfort. A generic questionnaire went out to every adult stakeholder group, including parents, and asked about the extent of their involvement in the design of the school, along with more general questions about the aesthetic quality and general impression that the school gives. Children received a separate scheme of work (see 3.5.9 and 3.5.10). The complete toolkit is included in Appendix H.

3.5.3 The Pre-pilot stage

The questionnaire was initially viewed by staff at Coventry City Council involved in gathering data for the education planning department in order to gain permission to send questionnaires to schools. Several minor alterations were suggested regarding the phrasing of some questions, which were implemented. For example "Are the needs of all users met?" was changed to "Are your needs met by the building?" because respondents could only account for their own perceptions and not those of other users.

Once the questionnaire had reached this stage in its development, it was sent to a local primary school in order to address any difficulties or issues that might arise from the questionnaire before it was sent to the target schools.

The questionnaire was filled out initially by one respondent from each category. They were then asked to comment on the layout of the questionnaire and any difficulties they had in terms of length of time it took to complete, understanding the questions, relevance, and any other issues that arose.

Following the feedback from this exercise, some of the questions were rewritten to clarify meaning, for example removing ambiguous words or phrases. When asked about the length of the questionnaire, the teacher and teaching assistant who responded commented that although their section was long, taking approximately twenty minutes to complete, because the questions were of direct interest and relevance to them they were happy to complete it.

3.5.4 The Senior Management Team; Head Teachers, Deputy Head Teachers and Assistant Head Teachers

The questionnaire for this group focused on questions regarding how the school design supports the ethos of the school as seen by the senior management team. Ethos may be described as the culture or philosophy of a school and is central to its organisational features. It also asked about the use of space, again central to organisational issues and management of the school, including economic considerations, such as whether the school building contributes to its financial efficiency.

3.5.5 Teachers and Teaching Assistants

This is the longest and most detailed questionnaire in the toolkit. This is due to the fact that teachers and teaching assistants are the adult group most able to assess

the efficacy of the building in terms of the support of curriculum delivery and appropriateness to its primary educational purposes. This questionnaire has sections on: the classroom, covering all aspects of its design, with an emphasis on ergonomic considerations, including size, ease of use, appropriateness to its use, acoustics, temperature, visibility, support for teaching and learning, safety, flexibility and accessibility. It also has a section for other areas in the schools such as the library and small group rooms, as well as non-teaching areas such as the cloakroom that although are seemingly peripheral to teaching and learning, have impact on the school as a whole. Questions are also asked about the appropriateness of the outdoor environment, which is considered extremely important in primary education.

3.5.6 Administration, Maintenance Staff, Kitchen Staff and Lunchtime Supervisors

These groups of school workers were asked questions specific to their job within the school. Often marginalised from decision making, people performing these jobs are very rarely invited to attend staff meetings where issues are discussed and decided upon. It was therefore imperative that this set of people were given a means of providing feedback about their working environments. The questionnaires were designed to be easy and quick to fill in, with questions that are relevant to the everyday direct experiences of the respondents. After discussions with the head teachers at some of the schools it was felt that these particular respondents might feel less engaged with the school community and therefore less willing to invest time in filling out a longer questionnaire.

3.5.7 Parents and All Stakeholders

As well as questionnaires directed specifically at their role in the school, all staff were asked to fill out a section concerned with more general aspects of the school

environment. This was also sent out to parents, one per household, (the survey was sent home with the eldest child of each family, with a covering letter explaining the purpose of the research.)

The questions also evaluated the stakeholders' involvement with the design of the school and whether they were satisfied with the amount of say they had during the design process. Aesthetics of the building and the overall impression generated by the school design were also assessed. This section also asked in an open question format the three best and worst things about the school as well as what their priorities would be for future designs.

3.5.8 Rationale for the Development of the Scheme of Work

It was decided that the opinions of all children should be sought in order to produce a set of data that could be analysed to see the areas that most children thought supported their learning and school experience, or detracted from it.

In order to access the opinions of all children a scheme of work was developed in two parts. A storybook with accompanying worksheet for children aged 4 – 7 (reception to year two) and a workbook for children aged 8 – 11 (years three to six).

A set of characters called The Cool Crew was designed for both the story and workbook, to which the children could relate. They were given deliberately culturally neutral names (Ash, Mo, Jay and Cal) which were simple and easy to pronounce and remember. The characters were given an amorphous, rounded shape, which aimed to give a friendly appearance. The characters in both the story and workbook were shown in a variety of situations and activities that children would encounter throughout their school day which the children were then asked to reflect on.

3.5.9 The Storybook

The storybook was designed to tell the story of the Cool Crew as they spend a day at the child's school. This was designed for children between the ages of four and seven. Fifteen popular books for children of that age were surveyed to examine the level of language used, their illustrations, text, font and layout in order to develop a design that children would find appropriate to their age group and familiar in style.

The book was designed to be read to groups of children by an adult. An accompanying worksheet was to be completed by the children as they listened to the story. The worksheet uses the same illustrations as the story to provide the children with visual cues when they fill it in. Each page has a set of preliminary questions to encourage discussion, or what has been termed 'conversation with purpose' (Kahn and Cannell 1957) followed by a summary question which is answered on the worksheet. The rationale for having a series of questions prior to asking the main question at the end of the page is to stimulate discussion and to encourage the children to think critically about their environment. This set of questions can be viewed as a guide, and questions may be omitted or others included in order to inspire appropriate discussions. At the end of each page there is a question in bold font which relates to a picture and blank face on the sheet.

Once the set of questions have been discussed and a chance for reflection given the child is asked a summarising question about the particular area of the school that has been discussed on that page. The child is instructed to decide whether a happy or sad face is appropriate for that part of the building, and draw it on the blank face on the worksheet. For example the page concerned with the classroom begins by telling the children that the Cool Crew are going to spend the day in their school, in their classroom. They are asked 'Is there enough space in your classroom?' and 'Does your classroom make you feel happy or sad?' These questions should be

used to guide a purposeful conversation with the adult. Finally they are directed to the worksheet in order to answer the question 'Is your classroom a good place to work?' They are able to know that they are answering the correct question by the use of the same picture (Figures 5 and 6).

If the child feels that their classroom is a good place to work and learn they complete the face with a smile, if not then the face is completed with a sad expression. The smiley face method has been used in previous research with young children (Tunstall and Gipps 1996, Eiser *et al.* 2000). During the first round of data collection using this method, a child suggested using a straight line to indicate an unsure face. This was adopted throughout the research.

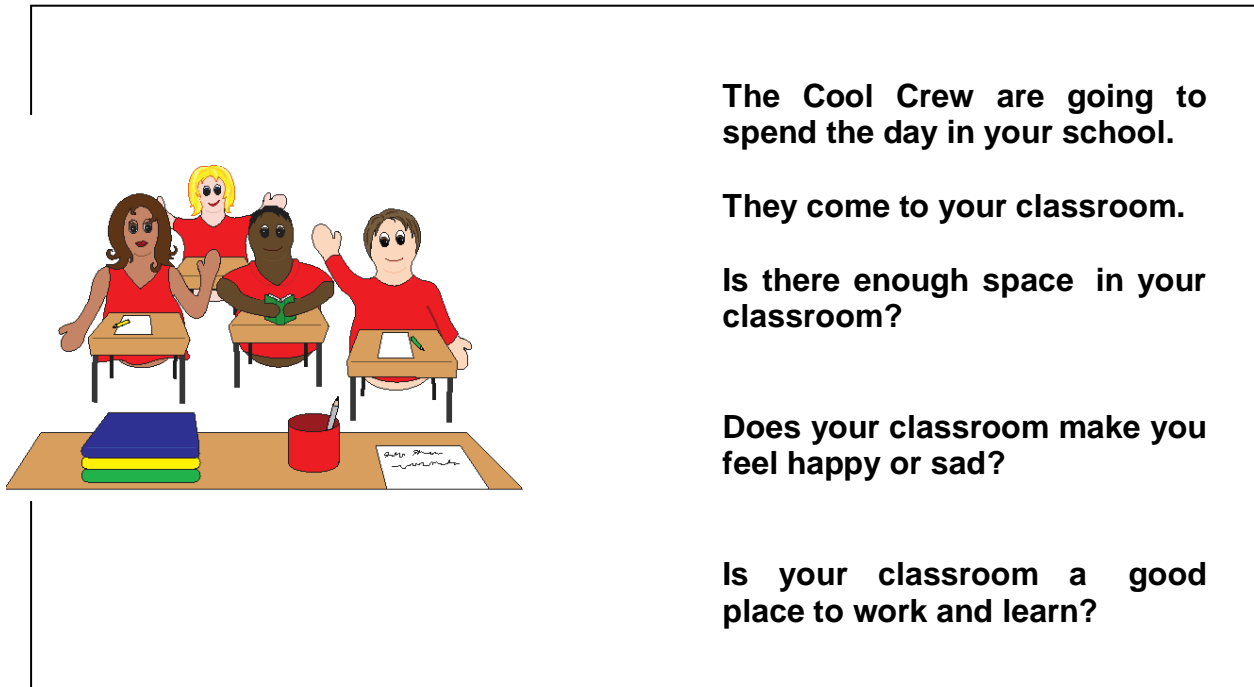


Figure 5 Questions about the classroom

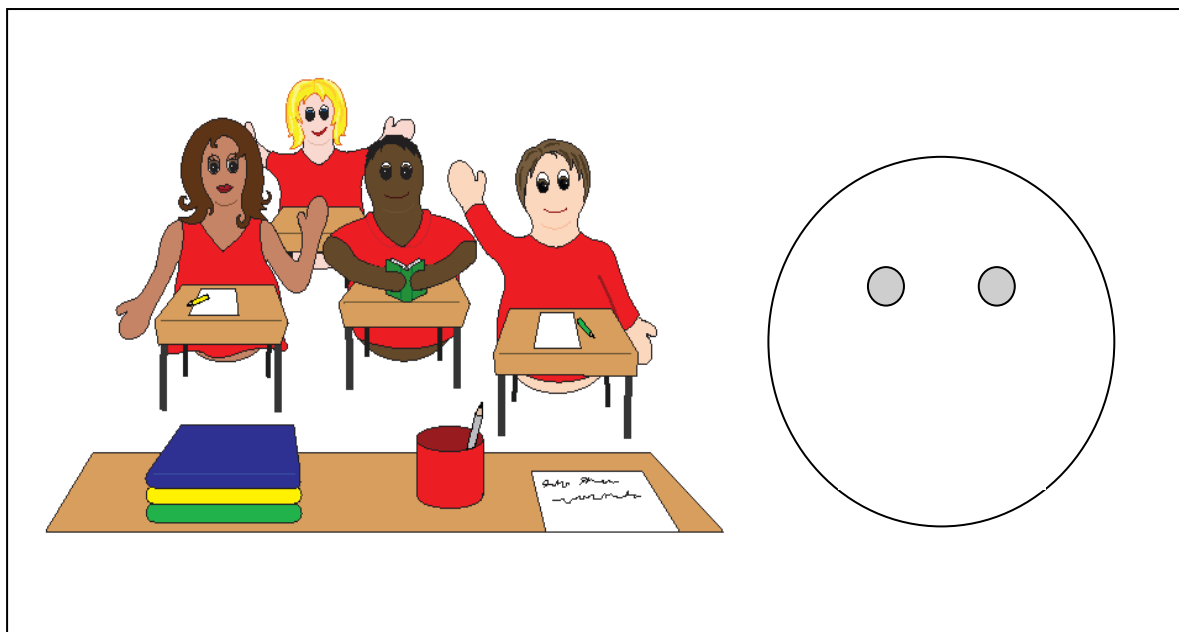


Figure 6 Corresponding answer on worksheet

The storybook, with associated worksheet, were designed with two intentions: to give a quantifiable broad overview of the opinions and feelings of very young children and

also to present an opportunity for the researcher to engage in a focussed discussion with young children in order to elicit ideas that the children may hold about the school buildings and environment that would otherwise escape the attention of the researcher. The results of the discussions were also recorded, analysed and went to form a part of the POE.

3.5.10 The Workbook

The workbook was designed for key stage two children, aged seven to eleven. It is expected that by the time that children reach the end of key stage one (year two, aged seven) they will achieve National Curriculum level two reading. However not all children reach this level by this age Therefore the workbook was designed to be read by children who had not reached the level of attainment expected of this age group, using basic, simple vocabulary and short sentence structure.

The workbook, like the storybook, introduced the Cool Crew characters and asked children questions about the school environment as the characters spent a day in their school. Closed yes/no questions formed the majority of the workbook to enable a significant amount of data to be gathered from a large proportion of the children in the subject schools. A selection of words that could broadly be categorised as positive or negative, were included for the children to choose from to enable analysis of general views on individual areas of the school. Opportunities were given for children to write sentences giving reasons for their answers, for example the section on lunchtimes illustrated on the following page (Figure 7).

Lunchtime

The Cool Crew have worked hard all morning so they are very hungry! They take a look at the dining hall and decide to have a school lunch.

Underline or circle four words that best describe your dining hall

noisy	bright	scary	uncomfortable	clean	
dark	nice	horrible	comfortable	dirty	squashed
lots of space		friendly	quiet		

Can they see all the food on offer? **Yes No**

Do they have far to carry their tray? **Yes No**

Is there room for the Cool Crew to sit comfortably at a table with their friends?

Yes No

Do the Cool Crew think that it is a nice place to eat? **Yes No**

Give a reason for your answer in the box below

--

Figure 7 Page from workbook for key stage two children concerned with lunchtimes

Children were also provided with two blank pages in the workbook where they were asked to create maps of the school and of their classrooms. Children's maps have been used on numerous occasions by researchers to allow children to visually represent their understandings of places of significance. (Matthews 1984, Matthews 1987, Young and Barrett 2001a, Darbyshire *et al.* 2005, Hume *et al.* 2005)

In this case maps of children's schools and classrooms were analysed in order to assess whether objects, places or themes were recurrent in children's drawings.

3.6 Phase Four: Implementation of the Toolkit in Five Target Schools

The toolkit which informed phase four of the research consisted of a set of questionnaires for adult stakeholders, a workbook for key stage two children and a story with accompanying worksheet for key stage one children. The concept for the toolkit and its realisation were based on the results from phase two of the research (pre-1990 school case studies) and a review of the model brief used as guidelines for the design of primary schools by Coventry City Council. The following section will focus on the methods adopted in order to ensure the effective implementation of the toolkit.

3.6.1 Sampling of Schools

At the time of the research six primary schools had been built to the model brief used by Coventry City Council. All six were contacted with a request to participate. Five of them agreed. The sixth school had a recently appointed head teacher who felt she wanted to become more familiar with the school before agreeing to be involved in a programme of research.

Five schools out of a possible six therefore agreed to participate, meaning that the research could be carried out on almost the complete population in schools built to

Coventry's model brief, which was considered to be an entirely representative sample.

3.6.2 The Adult Questionnaires

The questionnaire was sent to all adult user groups in the target schools during the autumn term of 2007. The adult user groups were: senior management staff (head teachers and deputy head teachers), teachers and teaching assistants, administration staff, kitchen staff, lunchtime supervisors, cleaning staff and parents. This followed discussions with the head teacher of each school to ensure that all target groups would receive the survey and would be encouraged to complete it. Holyhead gave the questionnaires to members of staff to complete during an in-service training day, with a specific time allotted for this task to ensure all staff would complete the survey. Other schools gave the questionnaires to staff to complete on a voluntary basis.

The return rate varied with individual schools and user groups (see tables 2 – 5). Management, teachers and teaching assistants had an excellent rate of return. Most of the questionnaires were also returned by the administration staff. Questionnaires for cleaning and kitchen staff elicited lower response rates.

Parental returns varied greatly with the school. Surveys were sent on two occasions to every parent with an explanation of what the survey was for and how the information would be used. Generally schools in catchment areas of high socio-economic deprivation had lower return rates than those in more affluent areas. The head teachers of the schools with the lowest rate of returns indicated that this was a problem for any information sent home. The head teacher of Grafton said that letters sent home that required a reply (for example permission slips) have to be followed

up with phone calls from the administration staff to gain parental permission. The head teacher said that there were several reasons for the low response rate to written information, including poor literacy skills, lack of interest and a profound sense of resentment towards the institution of school. He called this a 'Them and us scenario.'

3.6.3 The Workbook for Key Stage Two Children

The response rates varied depending on the instructions given by the class teacher. In three of the schools the workbook was given to most children as part of their school work, resulting in high response rates. At Woodleigh School and Grafton School however it was given as homework which unfortunately meant that many children did not return the completed booklets. The response rate was so low from Woodleigh that it was impossible to draw any conclusions from the limited data from the children. Only 15 key stage two children completed the Cool Crew workbook out of approximately 150. This was due to the school giving the workbook to key stage two children as homework, rather than being incorporated into the work of the school day. It was explained to the researcher on collection that although homework was set by the school only a small number of children regularly completed it due to a lack of parental support. The head at Woodleigh admitted that many children came from homes where they were not encouraged to do homework. Given the social problems the school had to deal with on a day-to-day basis, the non-completion of homework was not considered a major issue, and was therefore voluntary. The poor response from children was extremely disappointing. Unfortunately the small number of children respondents could not provide a statistically significant result. Therefore the

results from this school will concentrate on adult stakeholder responses and will only be able to give a partial view of children's experiences of the school.

Response rates from children in the remaining schools were high, providing statistically significant results. Generally workbooks that were completed in these schools demonstrated that they were well understood by the children. For example in the section where three words were chosen to describe the cloakroom there were only rare instances of contradictory words being selected, for example 'safe' and 'scary'.

Results from sections that required children to write also indicated that the instructions were understood, with children providing answers that were appropriate to the questions asked.

3.6.4 The Storybook and Worksheet for Key Stage One Children

The storybook and worksheet were delivered in school time, ensuring that every key stage one child who was present in school was given the opportunity to express their opinion on their school building. Woodleigh School did not participate in this part of the research, for the following reasons.

The researcher was unable to gain access to key stage one children at Woodleigh School in order to conduct the necessary activities for the research. The difficulties were ostensibly caused by not being able to co-ordinate a specific time suitable to all parties within the time-frame of the research. However at the time of the research the school was going through a period of upheaval caused by the planned building of a special needs school on the Woodleigh site. This had caused a great deal of dissatisfaction and controversy amongst staff, parents and the local community. The

researcher suspects that a desire to keep the situation in the school as calm as possible may have led to the reluctance on the part of school management to have a further discussion on the school environment.

In the four schools where children fully participated the researcher went into each KS1 class and spent time explaining to the children what they were required to do. Time was spent discussing happy and sad faces and how they would be represented. The children were then given the opportunity to practice drawing happy and sad faces on a prepared sheet similar to the ones on the worksheet. Many schools now use happy and sad faces for children to indicate satisfaction with their work, so the images were familiar to the children and at no time did anyone say they did not understand. The consistency in the results also indicates the level of understanding attained by this method.

The story about the school environment elicited a great deal of discussion amongst the children with the researcher. This was recorded by the researcher in the form of notes immediately following each session which were later transcribed and analysed for recurrent themes.

3.6.5 Method of data analysis

All data from the questionnaires and workbooks was analysed using SPSS data analysis package.

For the adult questionnaires each answer was coded 1-5 with 1 being 'strongly disagree,' 5 being 'strongly agree'. A 'not applicable' category was coded as 6. The results were analysed using descriptive statistics in the form of frequency tables and percentages. The results for each question were then examined in relation to the rest of the questions on related subjects. For example there was section which focused

on the engagement of adult stakeholders in the design process. This had nine questions on various aspects of the design and build stages for the new school. Results from each of the questions were placed into a table to examine the frequency and percentage of responses 1-5. After this the results from the nine questions were then examined as a whole to assess what percentage of respondents gave an overall positive response to the design process.

The analysis for adult stakeholders was conducted initially on a school by school basis in order to assess the effectiveness of each individual school. In the case of the questionnaire that was concerned with general aspects of the build and sent out to all adult stakeholders, this was cross-tabulated to examine whether there was a correlation between the role of the respondents and the response given.

A similar approach was adopted when analysing the data gained from the workbook and worksheet. The responses to the 'yes/no' questions in the workbook were analysed using SPSS in order to give descriptive statistics in the form of frequencies and percentages. This was conducted for each individual school. Results were also cross-tabulated with the child's class to see if there were any indications that individual classrooms had particular design issues.

The same approach was taken with the worksheets for younger children. Happy faces were coded as a positive response, sad as a negative response and a straight line as a mixed or unsure response. These were analysed on an individual school basis and cross-tabulated with individual classes to examine issues with particular classes or classrooms.

Responses to open question on both the adult and children's surveys were closely analysed to look for recurrent themes. For example a question on the workbook asks 'What if anything would the cool crew change about the school building?' The

responses to this were examined and tabulated to see how consistent the responses were in relation to the school and the individual class. Where reasons were offered for a particular response to an open question, these too were cross referenced to look for consistency.

In total 879 children responses and 372 adult questionnaires were analysed.

Table 1 provides a brief summary of the techniques adopted throughout phases two and four, the empirical phases of the research.

Table 1 Summary of Techniques Used in Empirical Phases of the Research

Phase	Techniques employed	Sample Size	Role performed in study	Objectives addressed
2. Case studies	<ol style="list-style-type: none"> 1. Observations of children and staff 2. Production of photographs and drawings from children 3. Semi-structured interviews with staff, 4. interviews with children based on observations and images they produced. 	<ol style="list-style-type: none"> 1 All classes in three schools 2. Drawings and photographs from twenty four children 3. Interviews with ten staff 4. Interviews with twenty three children 	To provide insight into users' perspective of representative primary schools	1,2,3,4
4. Implementation of the toolkit	All stakeholders in the target schools were given a specifically designed questionnaire and workbook to complete. Quantitative and qualitative data.	Five schools 372 adults 500 key stage two children 379 key stage one children (Total 1251)	To provide data from all stakeholders in order to review newly built primary schools, enabling development of design principles	4,5,6

Tables 2- 5 provide a more detailed overview of the participants involved in phase 4 of the research, the implementation of the post-occupancy evaluation toolkit. These include a breakdown of the response rates in the five participating schools. The names of the schools have been changed in order to preserve anonymity.

Table 2 Adult respondents in phase 4 by job

Job	Number of respondents	Approximate Number of potential respondents	Approximate Percentage of adults who responded per role	Percentage of total adults respondents
Management	24	24	100%	6.5%
Teacher/teaching assistant	92	100	92%	24.7%
Administration staff	22	22	100%	5.9%
Maintenance staff	6	25	25.25%	1.6%
Kitchen and lunchtime supervisor	16	30	50.5%	4.3%
Parent	212	> 1000	< 25%	57%
Total	372			

Table 3 Adult respondents in phase 4 by school

Name of school	Number of adult Respondents	Percentage of total adult respondents
Grafton	28	7.5%
Croft Park	126	33.9%
Windbrook	28	7.5%
Woodleigh	50	13.4%
Holyhead	140	37.6%
Total	372	

Table 4 Key stage two respondents phase 4

	Number of Potential Respondents	Number of Actual Respondents	Percentage of KS2 Children who Responded	Percent of Total Respondents
Grafton	90	30	33%	6%
Croft Park	240	210	87.5%	41.8%
Windbrook	122	122	100%	24.3%
Holyhead	240	138	57.5%	27.5%
Total	592	500	69.5%	

Table 5 Key stage one respondents phase 4

Name of School	Number of Potential Respondents	Number of Actual Respondents	Percentage of KS1 Children who Responded	Percent of Total Respondents
Grafton	90	70	63%	18.5%
Croft Park	180	167	92.7%	44.1%
Windbrook	60	57	95%	15%
Holyhead	120	85	70.83%	22.4%
Total	450	379	80.38%	

3.7 Other Research Issues

3.7.1 Ensuring Validity of Data

Social research needs to demonstrate validity, or as some researchers have suggested quality, rigor and trustworthiness (Lincoln and Guba 1985, Seale 1999, Stenbacka 2001, Davies and Dodd 2002). Triangulation has been defined as ‘a validity procedure where researchers search for convergence among multiple and different sources of information to form themes or categories in a study’ (Creswell and Miller 2000). Triangulation is a key concept underpinning the adoption of a mixed method approach for this research in order to ensure its validity, rigor and trustworthiness. It is recognised as a profitable approach to performing social research (Denzin 1970, Gilbert 1993, Bryman 1996, Bryman 2003). Four forms of triangulation in research have been identified (Denzin, 1970). These are

- Data triangulation [e.g. several sampling methods, different groups of participants]
- Investigator triangulation [more than one researcher involved in the collection and analysing of data]
- Theoretical triangulation [the use of more than one theoretical position in analysing the data]
- Methodological triangulation [more than one method for data collection]

This research used data triangulation through the collection of data from a variety of user groups in order to gain multi-stakeholder perspectives and methodological triangulation through the use of a mixed method approach. Using a variety of methods results in 'convergent validity' (Bryman, 2003).

The research utilised both quantitative methods and qualitative. Throughout phase two, the case studies in three pre-1990 schools, triangulation was achieved through using a variety of methods and participants. For example children were interviewed about their experiences of school and further evidence was gained through the use of observations of the same phenomenon. Furthermore a variety of participants were interviewed and observed to provide additional triangulation.

During the phase four of the research both quantitative and qualitative methods were used. A set of quantifiable variables were established and presented as a series of closed questions in order to provide data for analysis. However ample opportunity was given to all participants to respond to open questions, thus providing triangulation through the variety of data collected. Children were also given the opportunity to expand further on the provision of information by producing maps and drawings of their school. The multiplicity of data types and methods adopted ensured that information that may have been missed or only partially interrogated through the collection of data gained from closed questions could be gathered from the open questions and vice versa.

Finally the fact that the entire populations of the five target schools in phase four were surveyed, resulting in a total of 1251 returns, provides further validity to the research (see tables 2 – 5).

3.7.2 Ethics

When conducting research with any human participants ethical considerations must be paramount. The research should not be detrimental to the people engaging with the research in any way. This is doubly so when dealing with children and special ethical considerations must be met.

Before the empirical research commenced, it was ensured that all ethical requirements required by Coventry University were met. The research design was then submitted to Coventry University Ethics Committee and granted approval (see Appendix B).

Guidelines from the British Psychological Society (2004) were used to ensure maximum protection for participants. The BPS sets out standards for research which involves human participants. Although not specifically designed for research with children, the guidelines provide a framework that was adhered to throughout the research in order to remove the risk of psychological harm to participants. According to the guidelines, researchers should:

- Seek ethical approval for all research
- Protect participants from harm, to preserve their dignity and rights
- Seek informed consent
- Not be coercive
- Ensure the rights of participants to withdraw from the research at anytime
- Ensure anonymity and confidentiality
- Put in place additional safeguards for vulnerable populations (for example children)
- Act under appropriate supervision (BPS 2004)

The principles guided the design and implementation of the research, as will be clarified throughout the following sections.

As the research involved direct contact with children, the researcher was subject to a Criminal Records Bureau check and received clearance before the empirical research began (see Appendix C).

Ethical considerations were met at all stages of the research design. Consent was sought and gained from the parents or legal guardians of all children involved. This was done in the form of a letter sent to parents outlining the research and its aims. The letter had a reply slip that the parents completed and returned (see Appendix D). The research also recognised the ethical requirement for children's assent to be gained (Morgan *et al.* 2002, Checkoway and Richards-Schuster 2004, Kellett 2005). An explanation was offered to the children about what the research would entail and how it would be used, so they could make an informed choice (Alderson 2001, Christensen and Prout 2002, Miers and Murphy 2004, Alderson and Morrow 2004, Clifton 2005, Flewitt 2005, Kellett 2007). It was made clear that they were invited to take part in the research, they were not compelled to so and that they could withdraw at any time.

The taking of photographs, has been recognised as being a useful research method to use with children and young people, (Young and Barrett 2001a, Punch 2002, Tucker 2003). However, according to some researchers it also carries an extra-ethical burden (Young and Barrett 2001b, Young and Barrett 2001a, Young and Barrett 2001c, Barker and Smith 2001, Fasoli 2003, Prosser 2005, Prosser 2007). Therefore assurance was given to children and parents that any images of the children would be kept on a password protected computer, only accessible by the

researcher. Reassurance was given that their anonymity would be protected at all times and any images used would have their facial features blurred.

3.8 Conclusions

This chapter has outlined a justification for the methodological approach implemented throughout the research. Through the discussion of constructionism the philosophical position of the research was set out alongside a rationale for the development of the research methods.

The two empirical stages of the research were described, including an in-depth account of the methods used.

The following chapter will present an account of the case studies conducted as the first of the two empirical phases, in three pre-1990 schools.

Chapter Four: Case Studies of Three Pre-1990 Coventry Primary Schools.

An abridged version of this chapter was published in Contemporary Ergonomics (Newman et al. 2007a)

4.1 Introduction

This chapter presents the findings of the first stage of the empirical research, the initial case studies. The first section outlines the aims of the chapter and the ways in which it fulfils objectives set out in chapter one. The second section will provide background information to the three case study schools, including the socio-economic situation of the school, the numbers of children, the organisation of the school and the physical structure of the buildings. This will be followed by a presentation of the results. These will be discussed in relation to specific areas of the school, for example the classroom, the corridors and the playground. The final section of the chapter indicates how the findings were used to develop a framework for the post-occupancy evaluation toolkit.

4.2 Aims

The question this research set out to answer was ***'How can all user groups be involved in the evaluation of newly built primary schools?'*** In order to answer this, the overall aim of the research was to develop an evaluation method which took into account all user groups. To enable the development of the method it was necessary to establish which aspects of the school should be included in an evaluation. The second objective of the research, therefore, was to establish the key areas and issues the method should evaluate. By conducting three in-depth case

studies, representative of primary schools in Coventry, many of the concerns of stakeholders were revealed. The understanding of problems and topics which arose from the literature review of educational ergonomics, coupled with the researchers critical reflection on the diversity of voices, contributed to the development of the post-occupancy evaluation toolkit. A full account of the methods used in this phase of the research was provided in Chapter Three.

4.3 Background to Case Study Schools

Case study 1

J.C. Primary was built in 1975 and extended in 2001. It is situated in a ward generally regarded as working class, with several neighbourhoods categorised as within the most deprived 30% of all neighbourhoods nationally, and with one of the neighbourhoods being in the most deprived 10%. This is reflected in the high number of pupils eligible for free school meals (approximately 35%). A high percentage of the children have English as a second language and several children are from families seeking asylum. There is also a high percentage of children who have special needs. Turnover of children is high. The most recent OFSTED report was conducted in 2003, before the present head teacher was in post, and described the school as “very effective”.

Case study 2

L.W Primary School serves an area of extreme deprivation with 33% of children eligible for free school meals. At the time of the last OFSTED report (2003) an extremely high number of children, 57%, were regarded as having special needs. There were also problems with poor attendance. The school also provides out of school care and has a designated special needs (nurture) unit. It works closely with

the community, providing several adult education courses, family learning programmes and drop-in facilities. L. W. is described in the OFSTED report as “a very good school with a caring and positive ethos”

Case study 3

P.H. Primary School is situated on the edge of Coventry. It takes children from a broad socio-economic mix, with the majority coming from the surrounding private housing estate. It has an extremely high proportion of children from ethnic minorities, many of whom (37% of the school population) have English as a second language. A significant number of children are in the early stages of learning English and therefore the school has exceptional provision for teaching English as an additional language. The proximity of the school to a large teaching hospital meant a high turnover in children due to many parents working on short-term contracts.

4.4 Results

The impact of the school environment on the spatiality of children, alongside an assessment of stakeholders’ attitudes and perceptions of the school environment were explored through observations of children and adults as they went about their everyday lives in school.

The extent of the schools’ ability to meet the needs of its users was addressed in the interviews with children and adults, through an exploration of specific examples of where the school contributed to the functioning of the school and where it inhibited or prevented certain activities.

The themes and concepts that emerged from the observations and subsequent interviews were related to:

- Behaviour
- Learning
- Teaching
- Play
- Interaction
- Safety and Security

In order to discuss these themes in a context specific way they will be will related to the following areas within the built school environment:

- Classrooms,
- ICT suites
- Corridors and Cloakrooms
- Toilets
- Assembly and dining halls,
- Entrance areas
- Nurture rooms
- Playgrounds and outside facilities

4.4.1 Classrooms

PH and JC were designed as open plan schools. They were both built in the mid-nineteen seventies when, following the publication of the Plowden Report (1967), new school builds consistently followed a model of open plan design, intended to enhance social interactions between children (see Chapter Two).

At P.H. School, one member of staff explained that prior to 2003 there were no internal walls in the school, so that all spaces for teaching were completely open. The staff had found this unworkable; completely incompatible with the needs of the

modern day education system, due mainly to the high level of invasive noise and visual distractions. Internal walls were added to break the large area into a system of individual classrooms.

A similar situation was found at JC School, originally built to the same footprint as PH. Both schools found it necessary to break up the large teaching spaces into individual classrooms, with the exception of the reception classes, where large open spaces were retained. Figures 8 and 9 illustrate two typical classrooms from JC and PH schools.

During interviews with children and staff questions were asked about their experiences of open and closed plan classrooms. At JC one teacher explained that she had turned down a job in another school because it retained its open plan layout. All staff found the closed plan layout preferable to the original open plan. The most recurrent reason for this was noise transfer.

Figure 8 Classroom at JC (Photograph taken by pupil)

Figure 9 Classroom at PH (Photograph taken by pupil)

The children who had been in the PH school long enough to remember the open plan layout all stated that they preferred the closed classrooms. They identified three reasons for this: the noise from other classes, the “messy” appearance of the open spaces, and the lack of sense of ownership.

These reasons are of great interest in terms of meanings children attribute to space, and their relationship with place. The children said they found the noisy open plan environments not only distracting, making it difficult them to learn, but isolating. One year five girl said that she couldn’t talk quietly to her neighbour due to the noise levels from children in other classes, so sometimes she wouldn’t talk at all, and would “daydream.” Ironically, the environment that was designed to ensure children would interact socially here contributed to a sense of isolation and marginalisation.

Children stated that they didn’t like mess in their classrooms. They liked to know that everything was in its place and appeared to get a sense of stability from this. This had improved since the classrooms had been “closed in.” This linked closely to a sense of ownership. The year five teacher at JC said about the children:

“They’re much happier in their own room. If you had to swap your lesson to somewhere else people are not comfortable in another space. They have that sense of belonging.”

Children of all ages reiterated the importance of a sense of belonging, or attachment. They liked having a space that was linked to their identity as a member of a specific class. On a smaller scale, several children said they liked having their own special place to sit within the classroom. One girl from a year one class at JC School explained she always sat on the same carpet tile when it came to carpet time, and did not like it if another child sat there.

During the observation period at the schools it was noted that over several sessions children, particularly in key stage one, chose to sit in the same space both during time spent at tables and at carpet time, some apparently preferring to sit close by the teacher, while others liked to sit with their backs to a table leg to lean up against, although these children were frequently told to stop doing so.

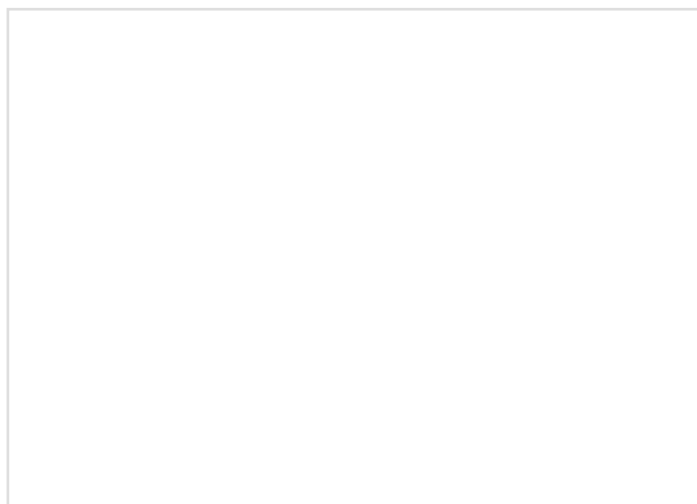


Figure 10 'The Giraffe Table' 'I just like it. It's my place' (Drawing by girl at PH)

In the interview a year one girl, aged five, at PH school explained in great detail about the tables in the class that indicated ability groups and were named after animals. She was a giraffe, one of the middle groups, for literacy. After drawing a picture of the table (Figure 10) she explained that even when she could choose her seat she always sat in the same place. When asked why this was she thought about this for some time and answered, "I just like it. It's my place."

Children sat in ability groups for the teaching of literacy and maths in all classes observed. The groups were never smaller than four or larger than six. When asked why, one teacher at PH said that to an extent group sizes were dictated by the layout of the classroom and size of tables. Teachers typically sat with one group per lesson, focussing on the specific learning objective for the lesson. Several of the teachers were asked informally during the observation period on what basis the children were grouped. They commented that the children were loosely grouped on their academic achievements and their behaviour. For example a year four teacher at JC School

said that he had split up a pair of “troublemakers” for literacy and maths, ensuring they were opposite ends of the room, not facing each other, although they were of approximately the same ability.

This indicates that teachers use grouping and spatial arrangements not only to focus on specific learning targets, but as a means of controlling behaviour. This reiterates the findings of previous research, (Kutnick *et al.* 2002) where it was found that teachers do not necessarily use the size and composition of groups to aid learning on a specific task, but to keep in check the conduct of certain children.

These findings indicate that children have a strong attachment to place even at the micro level, feeling a sense of security if they are allowed to sit in the same place. This place attachment contributes to a sense of ownership. Children across the age range spoke consistently of “my place” and “my classroom”. This suggests that they have a need to identify with a specific place as theirs within the school setting. There is a need on the part of young children for a meaningful relationship with space, what has been referred to as “friendship with place” (Chatterjee 2005). This is difficult to achieve in an environment where the children have to move in an open plan space with no sense of it being “mine.”

The installation of walls within a school designed to be open plan was not without its problems, the most obvious being lack of space and facilities. In schools that had changed their layouts several classrooms were felt both by staff and children to be too small. Several classrooms were also observed to be lacking in basic requirements such as sinks. A year one class at PH was observed during an art lesson. There were no sink facilities so pots of water had to be carried by staff down a long corridor, through an open teaching area, to the classroom. The classroom in turn was so small that there was no room to space out tables to effectively facilitate

an art lesson. Children were observed several times getting in each other's way, and jostling with each other for a position on the table for painting.

Similarly at JC School a year one teacher explained that she had not allowed children to paint at all that year, because she had no access to a sink. Instead her art lessons used relatively clean materials such as coloured pencils, felt tip pens and cutting and sticking. She said this was not satisfactory and that children in her class were being denied some experiences considered necessary for young children.

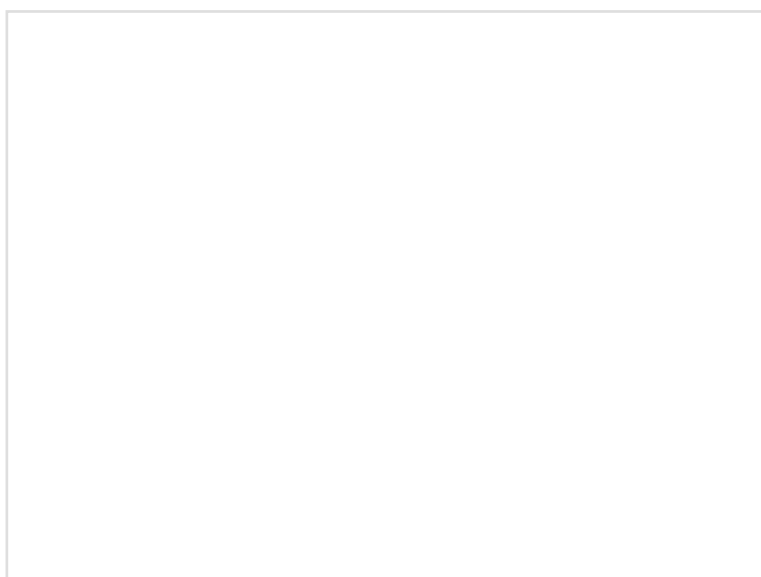


Figure 11 Small shared art area at PH (Photograph taken by pupil)

At PH School, several of the year one and two classrooms did not have direct access to a sink. Again the sinks were located away from the classrooms, in an art area, requiring a walk down a dark corridor (Figure 11). A classroom assistant from a year two class had to fetch water for an art lesson. This meant that she was out of the classroom for several minutes. The children were not asked to fetch water because the teacher told me they could not be trusted to be out of her sight.

Being in view of the teacher was a recurrent concern. Most teachers interviewed felt that children needed to be directly monitored at all times, or there was a potential for inappropriate behaviour. This supports the Foucauldian idea of the classroom as a panopticon (Foucault 1977). The head teacher at PH stated “kids will be kids if they’re out of sight. You know splashing water and being a bit silly.”

The year five teacher at JC explained that one of the positive things about her room was that the toilets were located at the back of her room, so children did not have to leave the room during lesson times. However she also complained that during quiet times, such as when she read the class a story the sound of running water was a distraction.

Foucault’s panopticon, as well as being a method of surveillance, also conceptualises individuals as constantly finding ways to subvert surveillance. This was observed several times in the various classrooms. For example in the year one class at JC during carpet time a boy was observed slowly moving away from the back of the group to underneath the table, gradually shifting his body so that he had his back to the teacher. He then devoted all his attention to a piece of blue tack he had found on the carpet and was rolling in his fingers. Older children often “hung around” in cloakrooms and toilets at the end of play time and within the classroom. They also put books up to prevent the teacher and other children looking at how they worked, or took the opportunity to whisper to their neighbours.

The layout of classrooms was also observed to affect teaching styles and lesson content. Both at JC school in the year four classroom and at PH in the year six classroom the rooms were long and narrow, due to the addition of partition walls (Figure 20 and 21).

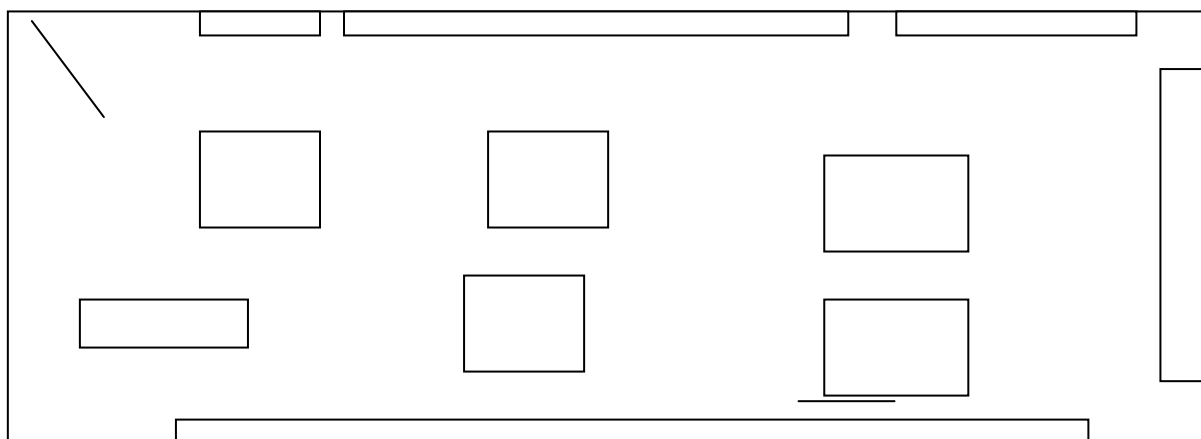


Figure 12 JC year four classroom (Drawing based on sketch in field notes)

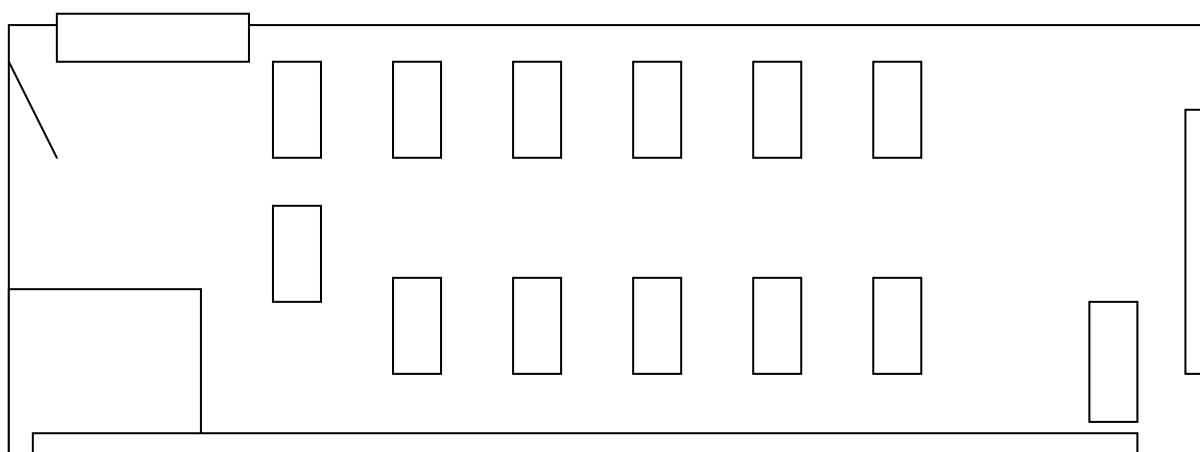


Figure 13 PH year six classroom (Drawing based on sketch in field notes)

Both layouts led to particular problems relating to teaching, learning and behaviour. At JC there was no choice as to where the interactive white board could be situated due to having large windows on one side of the classroom, in-built cupboards and

doors on two of the remaining walls. This led to a situation considered undesirable where for much of the time children were out of the teacher's peripheral vision.

Observations and interviews with both children and teacher revealed that some children did not pay full attention when the teacher was addressing the whole class. For example at the introduction of one art lesson several children on the outer edges of the classroom paid little attention to the teacher's explanation of how to make a "pop-up" card, the focus of the lesson. When it became apparent that several children did not understand what to do because they were unable to see the teacher's demonstration clearly and had been distracted, the teacher had to spend several minutes repeating instructions to them.

The design of the room also meant that some children did not have a clear view of the whiteboard when it was in use. This was made more problematic because it directly faced the window, causing excessive glare, rendering the whiteboard unusable unless window blinds were drawn thus inhibiting all natural light.

At PH the long narrow layout of the year six classroom was also problematic. Here the orientation of the room placed the teacher's desk and whiteboard at the end of a long, narrow space where many of the children sat far away from the teacher and had poor visibility of the board. For example it was observed that children sitting at the back of the room occasionally had problems reading instructions from the interactive whiteboard.

There were also issues for children who wanted to approach the teacher during lesson times. Due to the narrow gap between tables the children found it difficult to negotiate the space without knocking into the desks of other children and causing unnecessary distractions. It was also extremely difficult for the tables to be put together for group work due to the narrowness of the room.

The children also commented that they found the partitions ineffective, complaining that they were “too thin”, so there was still sound leakage between this classroom and the one next door. At PH school several of the older children expressed their dislike of the appearance of the partition walls, stating that the plastic covering peeled readily and that they found it all too tempting to pick at the covering, causing the composite material underneath to be seen. Lauren, a year six girl, said:

“They get tempted, when they’re bored, they get tempted to rip it off...if there was special wallpaper they wouldn’t pick it. It’s boring so they start.”

She went on to explain that she found the messiness caused by the lack of storage unpleasant. This was a recurrent theme amongst the comments from the children. Many children commented that they felt happier when their classroom was tidy. Despite children needing the scope for disorderliness when experiencing the outside, (Cloke and Jones 2005) in more formal learning spaces the children wanted a more secure, ordered environment, that looked cared for and where everything was in place. This is in agreement with the research that children in hospital feel safer in an ordered, clean environment (Birch *et al.* 2007). It also echoes Sibley’s work on the subconscious urge to ‘purify space’ (Sibley 1995).

The partitioning led to further difficulties. Several classrooms at JC had no external windows, relying solely on skylights, or artificial light from within the room or borrowed from the corridors that were visible through internal windows. At the other extreme some classrooms had so many windows that they had little room to display children’s work. The only room for displays was a wall next to children’s desks,

causing further distractions to the children when working. In the year four classroom at JC there was only one narrow wall where it was possible to display work. The children passed comment on this, one boy saying “I know we have work on the corridor walls, but it would be better to have it in the room. We’d be able to look at it then instead of just walk past it.”

The reception classroom at JC was built after the rest of the school. The head teacher explained that when the later part of the school was built in 2001 he requested a “pitched roof” to improve the outside appearance of the school. The designers had also incorporated a high-pitched ceiling in the reception classroom, (Figure 14), indicating a gap in understanding between what the head had asked for and what the designers had understood.



Figure 14 Reception class room with pitched roof at JC

During observations it was noted that there was a high noise level in this area from the activities of the children. Adjacent to this high ceilinged area was a smaller area

with a low ceiling used for the teaching of literacy to small groups. One of the reception teachers explained that wherever possible she worked in this area. She said that children appeared much calmer when working there, rather than in the maths area that was situated under the high ceiling. She said:

“I dread it when it’s my turn to teach maths. The area’s too noisy and it’s right next to the door to the outside, so the children in other groups are in and out all the time. It’s such a different feeling working in here [the literacy area]. The children are far better to concentrate. I find when it’s my turn to teach language I always go round there [to the low ceiling area], you’re enclosed you’re sort of, you know away from the rest of the class you don’t get any noise from the other children and the children seem to listen better because they’re not sort of distracted, they don’t see all the other activities going on, do they? Whereas in the maths area they see people going past to get outside, people are coming in and out, and in the winter, you can imagine, with that door open it’s freezing when they’re coming in and out, the actual change in temperature’s distracting let alone the actual children.”

Both teachers also found the reception classroom too small for the needs of the children. The reception classroom accommodated two classes, approximately sixty children. One stated:

“It’s quite cramped because you’re trying to create so many different areas in there. You have to create the wet area, the house and other things. Role play and the graphics area...the painting and the sand and everything.”

The reception teachers found it difficult to meet all the requirements of the foundation stage curriculum due to the size of the classroom.

The layout encouraged children to engage in very boisterous activities, unsuitable to the confines of the indoor environment. One teacher explained:

“They charge around and get quite naughty at times. We’ve put up these big board things that have worked quite well, so they have to slow down and walk round them.”

The design of the assembly hall at JC had a similar problem to the reception class. This had also been built as an extension to the main school. The head explained that this had been built at the same time as the reception class by the same architect. Again a pitched roof was requested, but the design also incorporated a pitched ceiling. The problems this caused were recounted by the head teacher:

‘It looked lovely and we came back from the summer holidays all pleased with the new hall...The first morning all the children filed in and sat down. Then a little girl coughed. It echoed all around the hall. Well, me and the staff just looked at each other in shock. The echo was terrible. No one could hear a thing. Anyway, the result was

we had to spend about £10,000 out of our budget to have acoustic tiles fitted to make it usable.'

The problem with the new reception class and the hall could have been prevented had the head teacher been more fully engaged with the design process. It is also an unfortunate example of building aesthetics taking precedence over its functionality. Had these additional buildings been built after the introduction of guidance on acoustics in school buildings (D.F.E.S. 2003a) the designers would have taken into account the need for good acoustics in these rooms. Prior to 2003 however, there were no statutory guidance on acoustics in schools.

Clearly there were problems with the design of the classrooms in PH and JC schools, due in part to the original open plan design and its subsequent partitioning into small classrooms. This had led to classrooms not always suitable for the purposes of teaching and learning, and in some cases inhibiting the delivery of the curriculum. Galton et al (1999:39) said that "Primary classrooms are remarkably crowded places...It is not simply a matter of numbers that determines the level of congestion, however, it is also one of the physical space in which pupils and teachers are obliged to work." Excessively small classrooms with poor layout exacerbate the problems of congestion, making teaching and learning more difficult and causing problems with pupil attention and behaviour.

JC and PH Schools contrasted greatly with LW School which had been built with individual classrooms from the outset. Although everyone interviewed agreed that the school was aesthetically unpleasing all staff thought the layout inside worked very well. The classrooms in particular were spacious with room for a variety of activities (Figures 15, 16 and 17).

There were clearly demarcated wet areas, which were uncarpeted to allow children to experiment freely with a variety of messy materials, such as paint and clay. These spaces were situated away from the main teaching areas, allowing children's work to remain in place to await completion or to dry, and would not be disturbed. Throughout the observation period children were engaged in a variety of art based activities, including those that were prohibited at JC and PH.

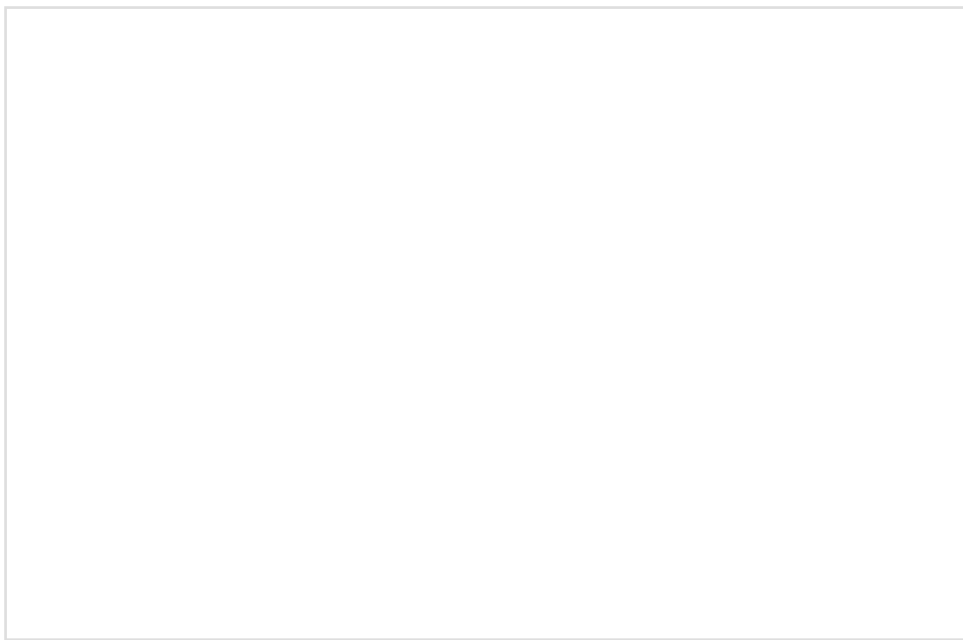


Figure 15 Classroom at LW. Large floor area, lack of natural light due to drawn blinds (Photograph taken by pupil)



Figure 16 LW Spacious classroom, with little natural light

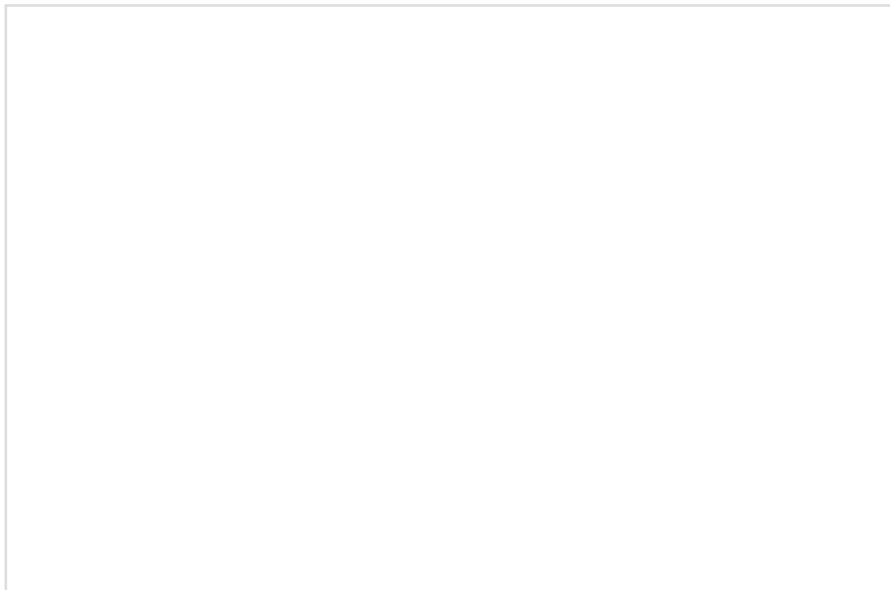


Figure 17 Art lesson in year three classroom LW (photograph taken by pupil)

On one occasion a group of year six children were on a trip, therefore their classroom was not in use. The head of science took the opportunity to use the available space to set up a series of science experiments. All classes were timetabled to visit the classroom to conduct the experiments, which included making electrical circuits, looking through microscopes and taking apart a model of the

human body. It also included experiments with water and bubble solution, which were placed in the wet area of the classroom, allowing children to experiment freely with the materials.

This indicates the effect on the curriculum of simple changes to the design of a classroom. Specifically in this case having a room which is not only spacious enough to accommodate a range of activities, but is constructed from the appropriate materials, in this case an area with a washable, waterproof floor, that encourages activities which support a wide curriculum.

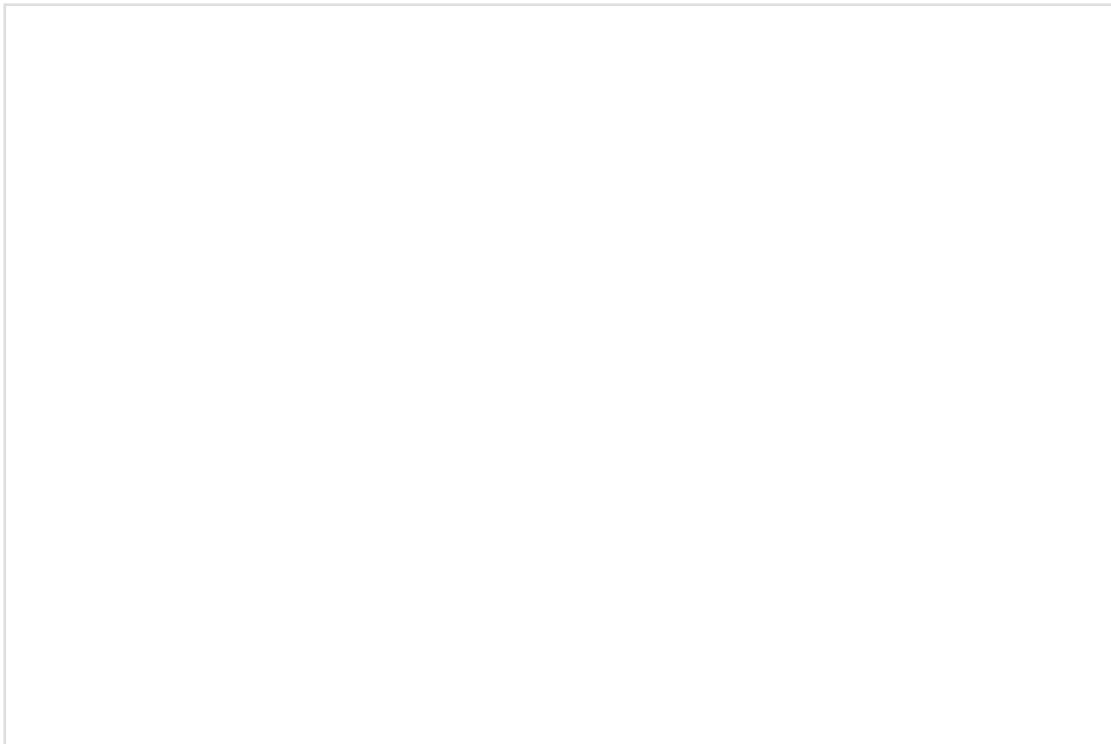
Observations in the classrooms revealed that this additional space accommodated the needs of children who had special needs. Children were observed working in small groups in these areas, getting one to one supplementary help from teaching assistants, remaining in the classroom, but away from the larger group of children.

LW School was situated in an area of extreme social deprivation. Many children experienced problems associated with deprivation, including aggressive behaviour and the inability to socialise appropriately. The school faced this problem through developing a scheme of work to encourage emotional literacy. This entailed lesson time devoted to discussing feelings experienced by the children, encouraging them to verbally express and describe their emotions. It was explained by the teacher who was responsible for special needs, that children who attended the school are often forced to repress their emotions in their home lives, so the emotional literacy course was designed to allow children opportunity to explore emotions such as joy, jealousy and anger. The school found that children who had lessons on emotional literacy were better able to express their feelings, and were better able to present them in a more acceptable way (see Figure 18). For example children who were angry due to

a particular situation were less likely to become aggressive and instead were able to verbally explain the causes of their frustration.

The school also placed the concept of 'nurture' at the core of its philosophy. This led to the building of a nurture room and the employment of a special needs teacher who specialised in taking a nurturing approach to school. Many children attended a nurture group at the school, which is discussed in section 4.4.6 of this chapter.

In addition to the groups which took place in the nurture room, provision was made for any child who felt the need to have breaks and lunchtimes inside with a teacher. This was arranged on a rota basis so that one classroom was always available. Children could go to this classroom and eat and drink at the table in the wet area, away from situations they felt unable to deal with. For example one year three boy who had behavioural problems had been involved in an argument on the playground with another child. Rather than having to remain in the volatile situation he was able to use the strategy he had been taught in nurture sessions to go into the 'safe' classroom, sit down with a drink and biscuit whilst discussing the situation with a teacher. Without this space the boy would not have been able to implement the strategy for managing his behaviour.



**Figure 18 Display of words associated with 'Emotional Literacy' central to the ethos of LW
(Photograph taken by pupil)**

Wet areas in classrooms were frequently used for children to eat their lunch in small groups under the supervision of a teacher or teaching assistant. Many children found eating in a large dining hall stressful, therefore the school made provision for these children to have dining arrangements on a smaller scale, where they could engage in conversation with other children and adults, whilst feeling safe and secure within the classroom, but away from the main work space.

This was indicative of the positive nurturing attitude of the school, which was exceptional in its approach to behaviour and meeting the needs of all children. However it also demonstrates how an appropriately designed physical environment may support the positive ethos within a school.

There were problems with some aspects of the classrooms however. Because the building was listed, any alterations had to be approved by a special planning committee. Just before the research commenced some of the windows had been

replaced, but the school had not been permitted to have efficient double glazed windows, instead they had to have ones in keeping with the style of the building. This led to problems with temperature control and sound leakage from outside.

Many of the classrooms had extremely large windows, which although allowing plenty of natural daylight, caused a build up of heat, rendering the rooms extremely hot in summer months. However teachers explained that often in colder times of the year classrooms became uncomfortably cold.

The reception classrooms were also a recent addition to the school. These were built according to the area guidelines found in Building Bulletin 82 (D.F.E.S. 1996) and were much smaller than the other classrooms in the school.

These were felt to be too small for the needs of the reception children. The reception teacher said:

‘Compared to the other classes I think we have a raw deal down here. We’ve got sixty children and there’s just not enough space. They need more room really. We could do with having one or two of the rooms higher up the school’

Further problems were caused by the listed status of the school because of the constraints on the design, which had to comply aesthetically and in choice of materials with the rest of the school.

4.4.2 ICT suites

Both JC and PH schools used corridors as ICT suites. PH had an additional room for ICT, but this was not large enough to accommodate all the PCs needed for a full class (Figure 19). PH School had a policy whereby all classes partake in ‘RM Maths’,

a software programme which children work through independently aiming to improve maths skills. Each class was allotted a daily fifteen-minute time period for this activity. During this time the class was divided into two groups, one working in the purpose built suite the other on the computers in the corridor. This meant that the teacher had to walk between the two groups. Neither the children nor the staff felt that this was satisfactory, although several children stated that the computer suite was one of their favourite places in the school, mainly due to the technology available i.e. flat screen computers. The children complained that often they had to wait for the teacher to come to solve technical problems, as they were not always immediately available to give help.

JC School did not have a computer suite, although one was being planned. All the ICT lessons were conducted in a corridor situated between a set of classrooms and the assembly hall. This led to a great deal of traffic, especially when classes walked through to attend a PE lesson in the hall. Children said that they found this distracting. One of the year five teachers said that she found teaching in this situation very difficult:

“Certainly, the computers down the main corridor, as they are, aren’t that helpful. And it’s actually hard to make a teaching point to the class while they’re working on those computers. Obviously having them at workstations within a computer suite would have that much better.” (Year five teacher).

She went on to explain that by the time they had walked to the corridor and the children had settled onto the computers they had often forgotten the original teaching point.

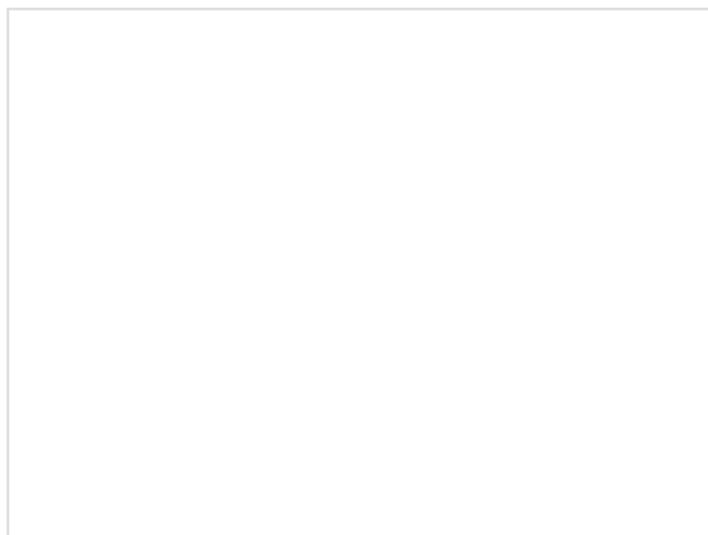


Figure 19 The computer suite at PH (Photograph by pupil)

The use of laptops in the classroom by children had been rejected by the school due to security problems. Several teachers' laptops had been stolen in the past. This was also a problem with projectors for interactive whiteboards. Several had been stolen in a break-in at the school the week after their installation.

The proposed room for the ICT suite was a wet area between the year one and two classrooms. As has previously been explained some of these classrooms had no direct access to sinks, so the removal of the wet area would exacerbate this particular problem, forcing the teachers or children to walk further to have access to water. When they were asked about the consultation process teachers expressed satisfaction with the solution found. Staff were asked about the plans for the new ICT suite, and had rejected the architects original proposal to use the library:

“The architect made some suggestions, but on one of them we’d lose the library basically and we’re pleased with the library, it’s a nice space that...we’ve worked on the library. Having got one bit right we don’t want to destroy that and get another bit. But in the end the choices were very limited because of the nature of the building.”
(year five teacher).

The children were asked about the new ICT suite. During the interview it became apparent they were not aware that a new one was being planned and had not been part of the consultation process.

Neither JC nor PH school found an ideal solution to the problem of where to conduct ICT lessons, resorting to using corridor space, not appropriate to the needs of the curriculum or the learning needs of the children.

LW had refurbished a spare classroom to accommodate a computer suite. This was a spacious area, which contained enough computers for each child in a class. There was also adequate floor space to allow large tables where children could work in groups. For example on one occasion children in a year five class were observed working on a project on the Romans. They were using computers in the computer suite to access a website that provided details and facts on their topic. They were then able to immediately go to a group table and use the information they had found to produce a drawing and caption for their project.

The experience of children using a spacious, well equipped ICT suite at LW was clearly preferable to those at JC School in particular who did not have the room or facilities to fully develop their ICT skills.

4.4.3 Corridors and Cloakrooms.

As well as being spaces to allow movement between teaching and other places, corridors in PH and JC had numerous functions. At PH school they housed storage space for coats and bags. These were often in small, dark spaces. Both children and adults felt that these spaces were not appropriate:

“You get pushed and once I had my head bumped on a peg. I had to stand on the rail thing to reach up, and someone pushed a bit and I bumped my head” (year one girl, PH)

At JC school this was also a problem; older children have coats and bags stored on movable racks where children place belongings, they are then stored in large cupboards:

Year five teacher: ‘I think that generally the cloakroom areas are not good, they’re too squashed everywhere, they’re very small, and this idea of wheeling coat racks in and out of cupboards would be nice if it worked well, but it needs more space to wheel them out clear give children easy access and put them back in... I think that giving children space for their personal belongings is very important ...this is your space. I think that because it’s so squashed in the cloakroom some people haven’t got that sense of space...

MN: You’re implying that it has a negative effect on behaviour

Year five teacher: Well I think it does, because it’s not ‘this is your little bit’...”

Children frequently complained that items got lost or stolen in the cloakrooms:

“My PE bag's been nicked loads of times. It's dark up there and they think no one can see them. It'd be better if we had a place to put stuff so it wouldn't get nicked. ” (Year four boy)

Cloakrooms were occasionally used as hiding places from other children, and from staff:

“Once when it was cold I hid in all them coats for all of playtime.”
(Year two girl)

“When you don't want to go straight into class, you hang about in there.” (Year five boy)

Cloakrooms were also identified as a possible site for bullying, particularly amongst the older children (Figure 20). This has been identified in previous research (Psunder 2005). One of the issues children raised in all schools was that the cloakrooms were poorly lit, making them feel vulnerable. Although none of the children could relate specific accounts of bullying that had happened to them in the cloakrooms, at both PH and JC schools the children said that other children had been “picked on” in these areas. This had happened mainly at the beginning and end of the school day when children were putting away or collecting belongings, and there was no adult presence.



Figure 20 Dark corridor and cloakroom led to sense of danger (Photograph taken by pupil)

In the year four classroom two large cupboards house coat pegs for the year six class, as they do not have access to a cloakroom area of their own (Figure 21). This causes what the year four teacher called “huge problems.” He went on to elaborate, saying:

“When they [the year six class] have P.E. they come in the middle of a lesson... my class are completely distracted and it takes age for them to settle down again. We’ve also got one little girl who hides in there. A few weeks ago we thought she’d run out of school until we heard her in the cupboard. That set-up has caused us no end of grief.” (year four teacher)

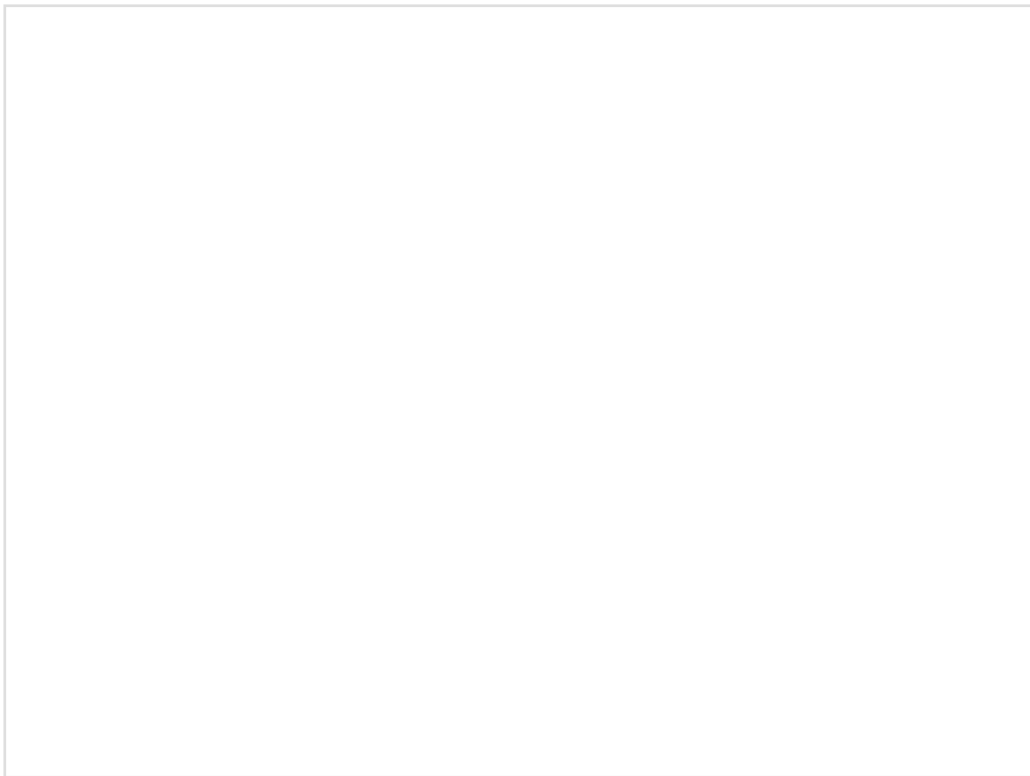


Figure 21 Cloakroom in built-in cupboard at the back of year four classroom at JC where children would often hide (Photograph taken by pupil)

The JC reception teacher indicated a problem specific for infant children:

“The cloakroom and the toilets, they’re shared between year 1 and reception, and with all the children trying to get their coats, and the hooks are too close together. You’ve got hooks there and hooks at the top. So they tend to just leave the coats on the floor, which isn’t really their fault is it. And their little fingers can’t do it.” (Reception teacher)

Because the cloakroom is shared between the reception children and year one this caused problems with noise due to reception children being taken to the outside area throughout the day.

Both schools had a servery for school lunches in part of a corridor. This caused problems when some children were queuing and others were trying to move around the corridors. On several occasions at lunchtime children were observed getting in each other's way, jostling and being told off by teachers.

Several classrooms in both schools had internal windows, opening onto a corridor. At times when children and adults were moving about the school this was observed to cause some distraction, for example a year one class at JC school was told several times to stop looking out of the windows and to concentrate

“Look at me, not what's going on out there” (year one teacher)

LW school had large corridors, allowing children to flow easily round the school. All classrooms had external windows so there were no problems with distractions caused by pupil movement.

Although the design of corridors and cloakrooms may be considered relatively less important than the classroom, they are central to the smooth running of the school day. They should ensure easy access for children and adults around the school, and the safety of belongings. They should also contribute to the sense of safety for children and adults, a design flaw in at least two of the case study schools.

4.4.4 Toilets

Toilets were the places most frequently mentioned in a negative way by the children from all schools. School toilets were consistently described as unpleasant. Words that arose repeatedly during interviews from children across the age range by both boys and girls were “dirty”, “smelly”, “embarrassing”. Several children stated that they hated using the school toilets, and would often wait until they got home if they could. Some of the children said they found the toilets “scary”, as they were places

where bullying occasionally occurred. None of the children could cite specific events, but the fact that they felt a possibility of threat is indicative of a problem. All of the toilets only had one entrance, one year four boy explained so “you feel like there’s no escape if someone comes in.”

The findings from the schools support previous research which has revealed the physical and psychological harm that poor toilet design may have on children (Vernon *et al.* 2003, Vernon 2007a, Vernon 2007b). Like corridors and cloakrooms, school toilets may be considered a peripheral part of school design, but it is essential that they promote comfort, well being and prevent bullying.

Children from all schools also told of incidence of vandalism, including breaking toilets, graffiti on the walls, throwing of wet paper towels, deliberate blockage of toilets and sinks with paper (Figure 22). The head teacher at JC pointed out the ceiling of one set of boys’ toilets that had been vandalised by children throwing wet toilet paper on it. When asked why the toilets had been defaced a year three girl at JC said:

“I think it’s because they’re horrible in the first place and people think they can get away with it ‘cause it doesn’t matter. If I could change anything about this school it would be the toilets. They’re horrible.”

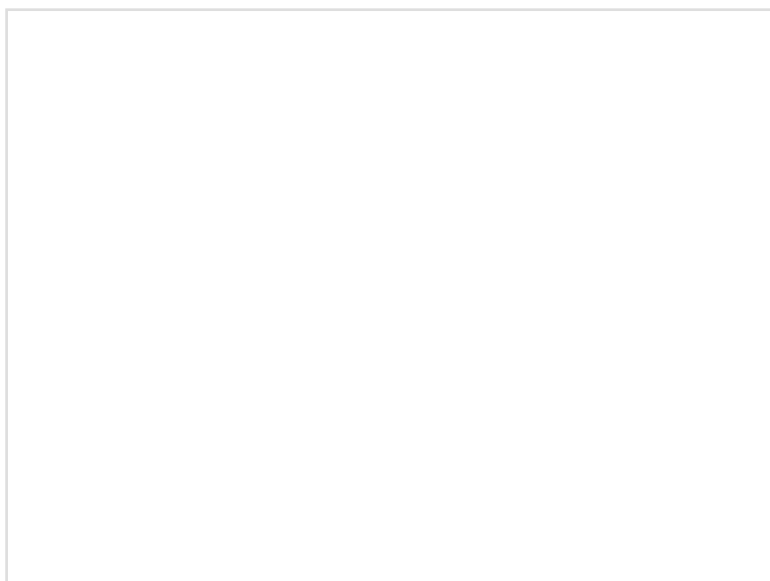


Figure 22 Broken toilet JC school (Photograph taken by pupil)

PH school had similar problems, where children had broken locks and had written on the walls (Figure 23).

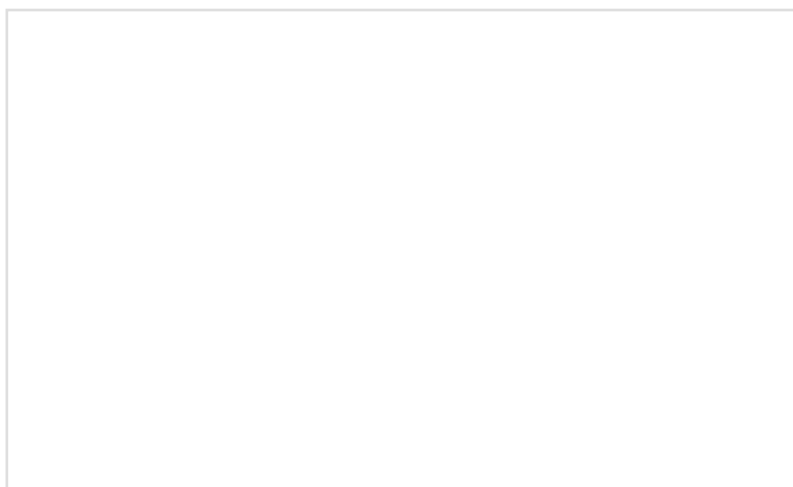


Figure 23 Graffiti on toilet wall at PH School (Photograph taken by pupil)

Children at LW school took an image of a toilet that was out of order (Figure 24). They revealed in interviews that toilets were often unavailable due to vandalism or wear and tear, exacerbating problems with the insufficient number of facilities available.

Figure 24 'Out of Order' toilet at LW (Photograph taken by pupil)

Staff also felt that the toilets were a problem, mainly because of the insufficient number to accommodate the needs of the children:

“There’s only four toilets for the boys and four for the girls. That’s for year 1 and sixty something children. And obviously at times when they have to all go at the same time, fruit time...and dinnertimes

MN .So there’s a potential for time slippage?

Yes, that’s it. And if you did sort of sequence it so that each sort of group went separately you would be there about half an hour.” (year one teacher LW school)

4.4.5 Entrance Areas

The school entrance area figured highly in the photographs and interviews with children from all schools, although did not feature in the concerns of the teachers.

Most children felt that the entrance to the school was important, because it was about “first impressions”, or how the school was perceived by visitors:

“When you first walk in it’s what the school is about” (year four boy PH).

“I like this part because it’s big with comfy chairs and makes people feel welcome” (year three boy JC).

These comments illustrate a recurrent theme expressed by children, that the entrance to a school is important as it ‘sets the scene’ for the rest of the school. They considered it necessary for this part of the school to appear comfortable and welcoming in order for visitors to get ‘the right impression’ about the school.

The children also liked the functional aspect of this part of the school. For example “It’s where visitors know where to go. And people can come in, but can’t get right in the school.” (year three boy JC). This emphasises the necessity for security in school, where children feel they are safe, but not isolated from the outside world.

JC and PH had contrasting entrance areas. JC had a large area, with comfortable chairs, tables and magazines for visitors to look at. The head teacher’s office, administration office and community room were accessible from this space. This area was immediately accessible from the outside, but with a locked door ensuring that the secretaries acted as “gatekeepers” to the rest of the school. PH had a much smaller entrance area. The head teacher’s office was accessible from this area, and there was a small hatch where visitors could speak to the administration staff. This area was accessible to the outside with a locked door to the rest of the school. However there was no room for visitors to sit down to wait to see staff, for example. Instead they were let through into the main part of the school. On one occasion a

parent with a pushchair was in the immediate entrance speaking through the hatch to the secretary. Due to the lack of space no one else could move in or out of the door. The parent obviously felt pressurised to go away as quickly as possible, commenting 'I'll get out of everyone's way.'

4.4.6 The Nurture Room

The findings on the Nurture Room which was an adjunct to this phase of the research were published as the peer reviewed paper 'We Change Lives in Here': Environments for 'Nurturing' in UK Primary Schools' (Newman, Woodcock et al. 2007b). For full paper see appendix F.

4.4.7 The Outside

The theory that children have surplus energy that needs to be released, first suggested by Herbert Spencer in 1878 is dominant in discourses concerned with play in schools. Throughout observations, the teachers frequently expressed the opinion that children need to get outside to "run around" and "let off steam". On one occasion during a wet break teachers expressed the idea that because the children had not been outside there would be deterioration in their behaviour.

The idea that playtime is primarily to "burn off extra energy", focussing only on the physical aspects of play has been criticised in recent years (Evans and Pelligrini 1997, Jarrett et al. 1998, Murata and Maeda 2002, Antrop, et al. 2005). The playground is central to the idea of the social child. Learning through play is important in much of current educational thinking. (Wood and Attfield 2005:153) state:

“Play acts as an integrating mechanism that allows children to draw on experiences, represent them in different ways, make connections, explore possibilities and create sense and meaning.”

Hart (2002:136) says that play is “fundamental to all domains of childhood and adolescent development – physical, intellectual, social and emotional.” The provision of a suitable arena for play is therefore vital to a child’s learning.

The adults interviewed focussed their concerns on the formal inside learning environment, especially the classroom. The children, however, without exception felt that the places of most significance to them were outside. The vast majority of photographs the children took were of outside places, often of no apparent significance to the adult observer, but with deep meaning to the children who took the images. For example a year three girl took a photograph of a tree (Figure 25), which she explained was known to the children as the ladybird tree, due to the abundance of them. She said that she and some of her friends liked to watch the ladybirds and to catch them. These intimate aspects of children’s relationship with place are often omitted from the design process, although knowledge of the places that are important to children would enable designers to provide a more appropriate engaging, meaningful environment for them.



Figure 25 'The Ladybird Tree' (Photograph taken by pupil)

However there was a strong gender divide as to the specifics of the places of significance. Space/place within school is highly gendered (Thorne 1993, Mac an Ghail 1996, Skelton 1997, Gagen 2000b, Gagen 2000a, Skelton 2000, Gagen 2001, Renold 2001, Gagen 2004b, Gagen 2004a, Renold 2004). The majority of boys interviewed stressed the importance of the football pitch to them, taking many photographs and drawing pictures of the places reserved for them to play (for example Figure 26).

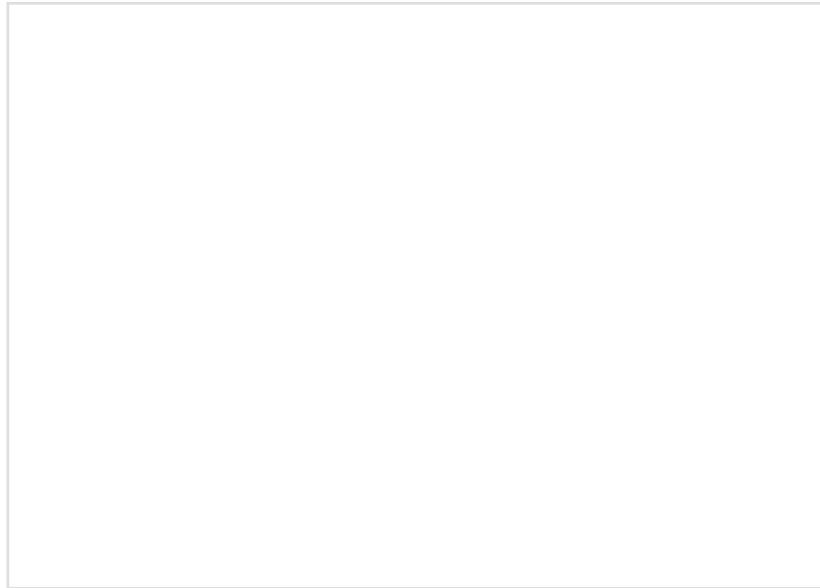


Figure 26 Daniel's picture of the football pitch (PH)

The head teacher at JC school explained on my initial visit that “All the boys play football, having a kind of rolling game that never ends.” The importance of playing football in the construction of the hegemonic heterosexual, male school child has been well documented (Parker 1996, Swain 2000, Skelton 2000, Martino 2000, Renold 2001, Renold 2004, Newman *et al.* 2006). The boys interviewed at JC, of all ages, stressed the importance of playing football to being accepted amongst the other boys.

When asked about the boys who chose not to play football they expressed derision, using expressions such as “gay” “big girl” and “queer” to describe these boys. The girls also spoke in derogatory tones about these boys, but also complained that the footballers took over most of the playground, one girl citing an occasion when she was hit in the face by a ball. The girls also complained that although the boys were only supposed to use half of the junior playground for football, when it strayed onto the other side rather than the boys fetching the football back, they carried on playing, thus taking over the entire playground.

Clearly the use of outside space is closely linked to gender and to power relations generally within the school setting. This should be accounted for during the design process. The needs of all groups should be assessed using appropriate methods, ensuring the voices of less dominant groups are listened to and acted upon, with spaces provided for children who do not want to participate in boisterous physical activities and where they are not intimidated, threatened or coerced.

There is a growing body of evidence indicating the importance of children having contact with nature and natural surroundings (Moore 1997, Herrington and Studtman 1998, Fjørtoft and Sageie 2000, Wells and Evans 2003, Tranter and Malone 2004). Children often express a preference for “wilder” aspects of their surroundings (Jones and Cunningham 1999, Cloke and Jones 2005). However contact with wild areas was limited. Most of the time outside was spent on open, hard surfaced playgrounds. However, several children chose to photograph or draw and talk about areas considered less cultivated. Some children chose a simple a corner of a field, which was where they like to play. A year one girl chose to draw a picture of a stretch of grass (Figure 27). She explained that if the grass was examined closely “you can see the daisies. I drew them because they are beautiful”.

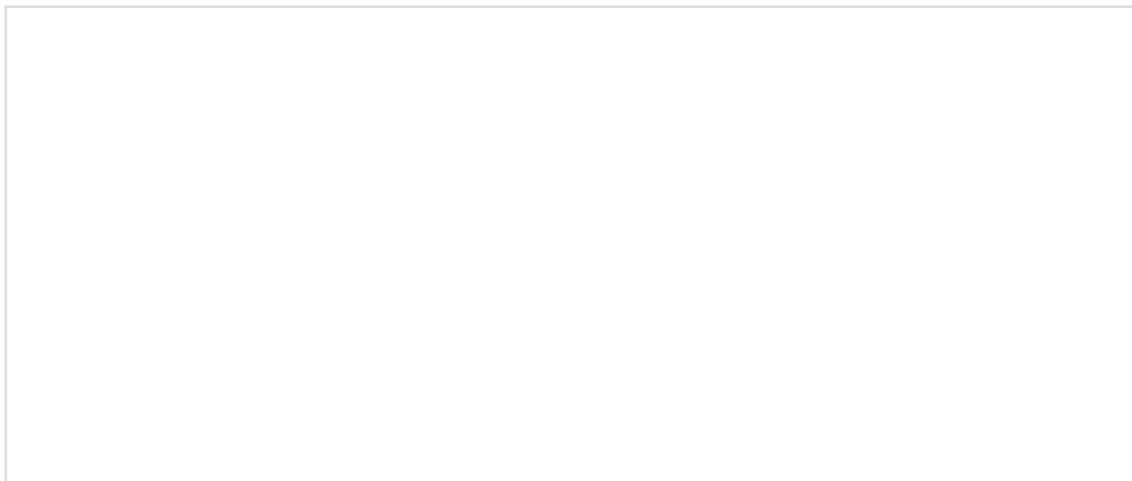


Figure 27 'I drew them because they are beautiful'

Another girl at JC found the pond exciting. She liked it because “it’s right out of the way and you can see frogs in it sometimes. When you’re little you get to come out here lots and see the frogs, not when you get bigger though.” The younger children in the school regularly had the life cycle of frogs in the pond incorporated into their science lessons, directly observing the frogs’ development. However as the children progressed up the school the access to the pond was lessened, which the older children resented.

All schools had built climbing frames that were very popular with the children. JC School had recently installed a series of half tyres in one of the fields which all of the

children were enthusiastic about, and took photographs of themselves using the equipment. Some of the older children chose to show themselves on this equipment although it was intended for the younger children. Two of the boys said that although it was for young children, up to year two, they still found it fun and would like to have the opportunity to use it. Year four children at LW also chose places for younger children to photograph and discuss, for example an area with soft play equipment intended for reception children (Figure 28).



Figure 28 Year four children at LW on equipment intended for reception children

At PH the reception children had a special outside garden that only they were allowed to use, with a tunnel and climbing frame (Figure 29). Again the older children said that they would like the opportunity to have equipment like this. The desire to play with equipment intended for younger children perhaps indicates the gap between what is expected of children as they get older and them still having some of

the needs for play associated with young children. This supports the findings of previous research (Newman *et al.* 2006).

All schools had built climbing frame activities, which due to the nature of the activities and the perceived danger in their use, had limited access, with children only being allowed to use the equipment on certain days (Figure 30).

Generally, the provision of large-scale physical activities for children was good. However, the question has to be raised as to how far the equipment provided met the social and cognitive aspects necessary to play. One of the reception teachers at JC said that she had suggested putting small play equipment outside for all of the children to play with, rather than just reception. She had spoken to the staff about putting, for example jigsaws, skipping ropes, sand trays, hoops, small balls etc for all the children to use, because she had observed older children playing with them surreptitiously when given the opportunity. However, this had been met with opposition from other teaching staff but especially from the lunchtime supervisors who had expressed the opinion that this would mean additional work for them and that the equipment would go missing or get stolen.



Figure 29 Playground at PH



Figure 30 Reception playground at PH

The case studies revealed aspects of school design which were of great significance to children and adults and therefore should be included in evaluation if this was to be meaningful for stakeholders. These were analysed in conjunction with the model brief to develop a framework for the toolkit.

Specific questions arose from the case studies and were incorporated into the evaluation:

- Does the building accommodate all aspects of the curriculum, including 'messy' work such as painting?

- Do children feel safe and secure in all areas of the building, including cloakrooms and toilets?
- Do children have a sense of ownership and pride in the school building?
- Does the building foster a positive ethos?
- Does the design and layout of the school, especially the classrooms facilitate teaching and learning? Particular emphasis was given to the question of whether new individual classrooms were preferable to the open plan model.
- Are the acoustics and lighting arrangements of sufficient quality to support the needs of the users?
- Does the outside area meet the needs of children, for example through the provision of appropriate large and small play equipment, and the inclusion of less ordered, 'natural' spaces? The case studies indicated the level of importance given to the outside space by the children and therefore the importance of including the outside space as a key part of the evaluation.

The questions that arose as a result of the findings from the case studies were combined with the analysis of Coventry's model brief and knowledge gained from the literature review in order to produce a framework which would be used throughout the development of the post-occupancy evaluation toolkit.

4.5 Post 1996: The Coventry Model Brief

In order to fulfil the second objective of the research, to establish the key areas and issue that should be included in a POE, it was necessary to combine the findings from the literature review, the three case studies with an analysis of the Coventry City Council's model brief which is used as a guideline for the design and build of

new primary schools. The first brief was devised before 1998, when the first of the “model brief” primary schools was built, and is frequently updated, most recently in 2005. The document explicitly states that:

“...the *curriculum is the focus* when designing new or remodelled schools. The way in which the *curriculum is organised, managed and delivered for the benefit of all pupils* must be uppermost in the minds of those who have responsibility for its design. The final building must *enhance the quality of the provided and received education*. It should also ensure a *flexible approach to teaching and learning* that allows for the implementation of changing philosophies.” (2005a:5)
(Author’s italics).

Functionality, specifically that relating to teaching and learning, was of primary importance in the development of the brief. This can be clearly seen throughout the document in the clear guidance it gives on key principles of the design, which, in summary, state:

- the building should be aesthetically pleasing;
- meet the needs of all users, including those with sensory impairment, physical or learning difficulties;
- give access to ICT; allow for various teaching styles;
- foster a sense of community;
- meets changing needs of education;
- meet the requirements of the community;
- meet the needs of indoor and outdoor education;

- avoid the mixing of two key stages in one teaching area;
- to provide teaching areas for sixty pupils, with the ability to divide the area into two areas for thirty pupils.

In practice this last principle has led to the introduction of sets of classrooms that are connected to each other by sliding doors and that open out onto a shared teaching area. This often includes computer banks and/or areas for art and craft. Critically, the document also states “After a complete year of use the school should be reviewed” (Coventry 2005a). However, the results from the implementation of this toolkit are the first evaluation the schools have received and as such provide invaluable feedback to the Coventry authorities as to the efficacy of their design process and key principles as laid out in the model brief.

Two further important criticisms of the Coventry model brief may be made:

- the brief is a set of generalised principles which do not take into account the specific contexts of individual schools
- the lack of stakeholder voices in the development of the model brief

Postmodern human geographies, including children’s geographies have recognised the complexity of human experience and have emphasised the specificity of place and the importance of context. By omitting the particular qualities of location the model brief may be accused of a ‘flattening’ or ‘conflation’ of place, conceptualising everywhere as ‘the same’ and refusing to recognise difference.

4.6 Reflections and Conclusions

Two diverse school design types were examined in the case studies: the open plan model which was the design of choice adopted by the majority of schools built in the

1960s and 1970s, and an earlier model with large separate classrooms representative of several schools built in the Midlands.

Results indicate the open plan schools did not support the needs of the current education system. Refurbishment to provide separate classrooms did not alleviate the problems associated with the open plan layout and in many cases created new problems, such as odd-shaped rooms, poor visibility and sound leakage.

Although the older building had classrooms which, according to children and staff, supported the spatial requirements for teaching and learning, there were other issues such as poor temperature control and acoustics that were highlighted through the research. Further problems were caused by the building having listed status, which meant that any changes to the building had to be approved by a special planning committee.

The research also revealed the need for nurture rooms to be designed into the fabric of the school building, to be seen as an essential element of the school, rather than an optional extra (see Appendix F).

Other areas of the schools, such as cloakrooms, toilets, corridors and outside spaces were often found to be inadequate due to low quality materials, lack of space, poor lighting or being generally outdated.

The case studies indicated that designs built before the introduction of Coventry's model brief were no longer suitable for the needs of the present day education system.

The next stage of the research was to apply the knowledge to the design of a method of evaluation which could be used by all stakeholders. The validity of this method would be tested by its implementation in the model brief schools, which would provide an evaluation of newly built 'model brief' primary schools.

In order to do this, I reflected upon the methods adopted in the first stage of the research and reviewed existing methods of post-occupancy evaluation. This revealed that no suitable method was available specifically for the evaluation of primary schools that accounted for all users. It was decided that a specially designed toolkit was necessary in order to provide a systematic approach to the evaluation of primary schools. Such a toolkit would provide a viable means for education authorities to conduct valuable evaluations which would 'feed-forward' to inform future school builds.

The methodological development of the post-occupancy toolkit was outlined in chapter three. The recognition of the necessity for a toolkit specifically for primary schools that accounted for all stakeholder voices was a direct result of the findings from the initial case studies which concluded that many schools built at this time did not sufficiently meet the needs of the users or of the demands of current approaches to education or teaching methods (Newman *et al.* 2007a).

Clear links between the design of schools and outcomes, both in terms of educational outputs and health, are evident in the literature. Therefore the need for continual evaluation of school buildings is apparent. Until this research was undertaken, there had been no evaluation tool designed which would take into account the specific needs of primary aged children and adults working in the school environment. The necessity for such a toolkit is pressing given the U.K. government's commitment to rebuild or refurbish around half of all primary schools under their primary capital programme over the next fifteen years (D.F.E.S. 2007). In order to avoid the mistakes of the past and to implement buildings that work for the stakeholders it is essential to carry out evaluations of existing schools buildings.

However the absence of an appropriate means of carrying out any such evaluation has meant that the primary school sector has missed out on a valuable opportunity to contribute to ongoing progress in building design. This toolkit goes some way to addressing the problem. The next chapter will provide an analysis of the results of the toolkit. These will be discussed thematically to reflect the main concerns that were raised by respondents.

Chapter Five: Results from the Post-Occupancy Evaluation Toolkit

5.1 Introduction

The chosen solution to the question ***'How can all users be involved in the evaluation of newly built primary schools?'*** was a post-occupancy evaluation toolkit, which sought to capture the views of a range of user groups. In order to test the efficacy of the toolkit, and to meet the third objective of the research, 'to develop and test the validity of the method through the evaluation of newly built primary schools', it was necessary to implement this in newly built primary schools. This chapter presents the results of the evaluation, and leads on to a critical reflection on the value of the method in the following chapter. This chapter firstly provides a brief background to the five primary schools involved in the evaluation; and secondly an analysis and discussion of the data along with results from each school so that individual designs can be evaluated. The implementation of the toolkit and issues that arose during this phase of the research was described in Chapter Three.

The post occupancy toolkit was implemented through 2007/2008 in five Coventry Primary Schools built to Coventry's model brief. At the start of the research six primary schools had been built in accordance with the model brief and five of these were recruited in the research. The sixth had a newly appointed head teacher who did not wish to be involved in the research due to her recent appointment.

5.2 Background to the Schools

At the time of the research the participating primary schools were, apart from one other, the only schools built to the new model brief. The pseudonyms given to the schools were: Holyhead, Windbrook, Grafton, Croft Park and Woodleigh. Four of the schools were situated in areas of socio-economic deprivation and were regarded as the most in need of renovation and rejuvenation. The exception to this was Croft Park, which was in a relatively affluent area of Coventry. The following table is a summary of the key features of the schools

	Year Built	Form Entry	Key Features
Holyhead	2006	2	Sustainability featured highly in the design, including a sedum roof and cedar panels on frontage. In fourth most deprived ward in Coventry.
Windbrook	1998	1	First school built to model brief. Current head teacher not in post at time of school build. In third most deprived ward in Coventry. Majority of pupils from ethnic minorities, many have English as an additional language
Grafton	2003	1 1/2	Built on a circular configuration. Formed as an amalgamation of two existing schools. A great deal of local resistance to the formation of the school. Falling numbers on the school register. Area of extreme socio-economic deprivation with high staff and pupil turnover.

Croft Park	2001	2	Larger than average primary school, with nursery attached. In fourteenth most deprived area of Coventry, making it relatively affluent.
Woodleigh	2004	1 1/2	Triangular configuration. Partly funded by New Deals for Communities. Shares site with nursery and conference centre. In third most deprived ward in Coventry

The geographical situation of the target schools had implications for the design and implementation of the toolkit. Children at most of these schools often begin their school life with lower than average abilities in social and academic skills. This had to be accounted for the design and implementation of the toolkit. Tasks that were a required part of the evaluation process within the toolkit were designed to be uncomplicated and were written in simple language in order to enable all children to participate.

For a full and detailed background to each of the schools please see Appendix G.

5.3 Results

In addition to the themes that arose from stage one of the empirical research, new themes emerged from the results of the post-occupancy evaluation. The results from the toolkit will therefore be discussed in relation to the following themes:

- Behaviour and Ethos
- Dignity
- Teaching and Learning
- Play and social skills

- Safety and Security
- Design process
- Aesthetics
- Ergonomic factors

As explained in Chapter Three section 3.6.4 children from Woodleigh School did not participate in this stage of the research. Therefore the results from children are based on the remaining four schools.

5.3.1 Behaviour and Ethos

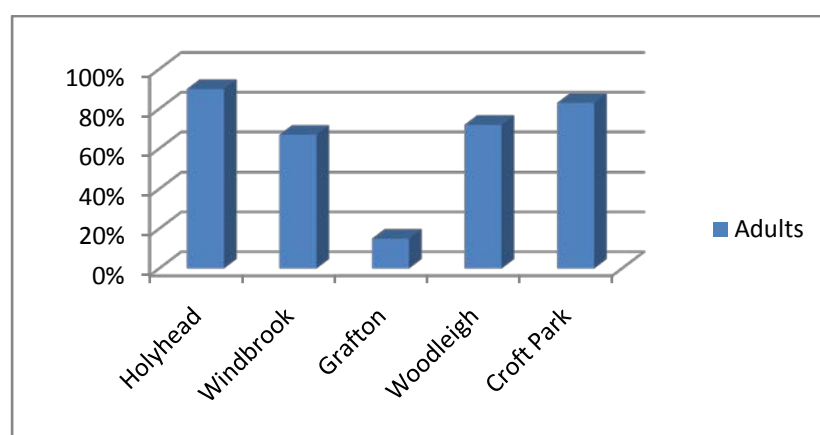


Figure 31 Positive adult responses on ethos

According to the DFES Standards Website, ethos refers to:

‘...the school's particular character and spirit... this is conveyed through the attitudes expected of pupils and staff...The school ethos is reflected in the way pupils relate to each other, how pupils relate to staff, and how the school relates to the community it serves...[It] could refer to the school's aims for pupils' spiritual, moral, cultural and social development.’ (DFES 2005)

All adult stakeholders were asked whether the school building contributed to a positive ethos. In most schools the response was positive, with the majority agreeing

or strongly agreeing with the statement. However, as indicated in Figure 31 the exception to this was Grafton, where the majority of adult stakeholders expressed the feeling that the design of the school contributed negatively. As the following discussion will show, this school had very particular design issues which led to problems with the behaviour of pupils, criminal damage and poor safety for children. These issues coupled with a sense of exclusion from the decision making processes led to a general sense of negativity about the school building from the majority of adult stakeholders, both those who worked in the school and parents of children who attended.

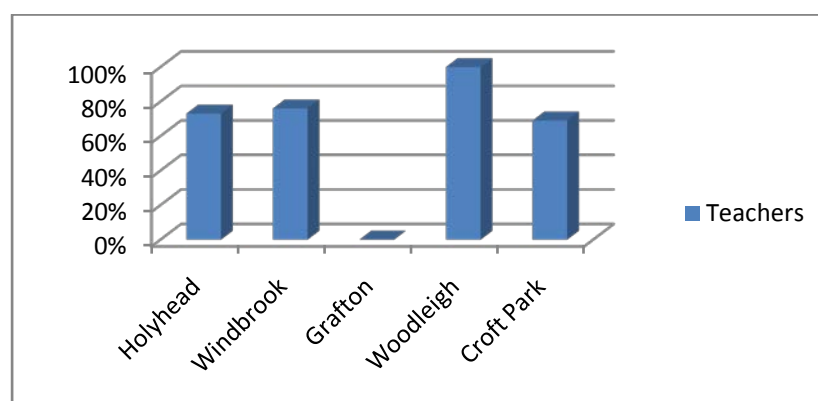


Figure 32 Positive responses to school building encouraging good behaviour

The overall results indicate that the remaining schools built to the Coventry model brief were believed to contribute to a positive ethos. There was a variable response as to whether the designs deterred vandalism. This may be attributed both to the individual design and to the geographical location of the school. Croft Park was situated in a pleasant residential area, considered to be in a relatively affluent area of the city, with low crime and unemployment rates. Vandalism was not a problem at the school or in the local vicinity. Windbrook was in a less affluent area of Coventry which did have a relatively high rate of crime problems with graffiti and other forms of vandalism. However the school itself did not suffer many of the problems of its

immediate locale. The head teacher thought this was because the school was set back from the main road, with a long front drive. The playground was also situated at the front of the school, acting as a 'buffer' to the main road.

Although teachers in most schools generally agreed that the school buildings supported the behavioural policy of the school, as indicated in Figure 32 a significant percentage strongly disagreed. The majority of teachers who responded negatively were from Grafton School. This reiterates the specific design problems with this school. One teacher from Grafton expressed the opinion that the social problems in the area where Grafton was built were not taken into account when the design was developed. She wrote:

'Perhaps in a wealthy area where they have not got the sort of problems our parents have they could have got away with this design. But our children come in with no social skills and do not know about how to behave. The school design makes the behaviour of our children worse than it might elsewhere.'

The teacher highlighted a key finding from the results; that school design must account for the specific location in which it is to be situated. This should not only be in terms of fitting in aesthetically with the immediate surroundings. The school should cater for the specific context and requirements of its target community. Areas of economic deprivation are associated with behavioural and social problems that are not so frequently found in more affluent areas (DCSF 2009b). School design should reflect this.

5.3.2 Maintaining dignity – small group rooms and personal care

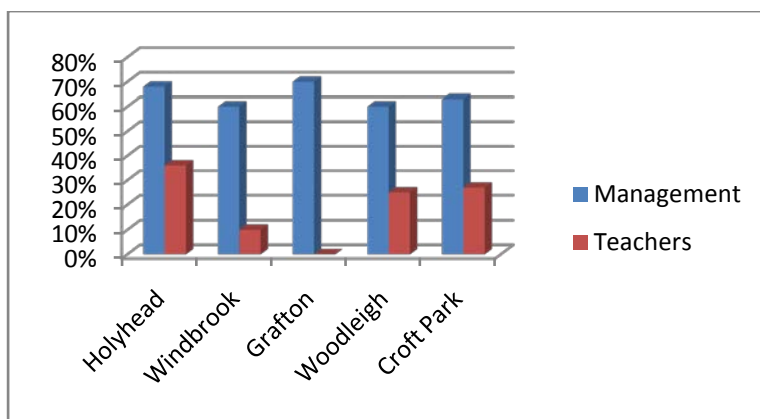


Figure 33 Satisfaction with number of small group rooms

Small teaching rooms serve many purposes in the primary school setting. For example they provide a space where children may receive additional support within the security of a small, similar ability group. They may also be used for activities that require a high adult to child ratio, for example practical science experiments. Previous research by the author argued for the necessity of small group rooms to enable the school to run nurture groups, argued to be an essential element of primary school provision, particularly in areas of high socio-economic deprivation (Newman *et al.* 2007b). In an informal conversation during a visit to the school, the head teacher said that she would like to run a nurture group in the school, but partly due to a lack of suitable spaces, this was not possible. The positive effect of the nurture group for children directly involved and for the whole school has been fully explored elsewhere (Bennathan and Boxall 1996, Lucas 1999, O' Connor and Colwell 2003, Cooper *et al.* 2003, Doyle 2004). As argued elsewhere, (Newman, Woodcock *et al.* 2007b) [see Appendix F] the provision of a nurture room should be included as a part of the design brief as an essential element.

As indicated in Figure 33 a large majority of teachers, overall 84%, thought that there were not enough small group rooms. This overall result reflects a consistently negative result in all schools. Although the provision of the shared space was

intended to serve a similar function to small teaching rooms, clearly teaching staff felt that the inclusion of separate, discrete rooms were a necessity. In written comments teachers frequently stated that small rooms provided privacy for children who may not wish other children to know they require additional help. A separate room provides a degree of security and sense of 'specialness' that an open space cannot. These findings support previous research by the author on the necessity for a 'special' specifically designed space for the effective provision of a Nurture group (Newman, Woodcock *et al.* 2007b).

There was a disparity between the results of the teachers' questionnaire and that completed by management. The majority, 64%, of head teachers and other members of the senior management team agreed that there were an adequate number of small group rooms. This may indicate an inconsistency between the needs of the school as perceived by managerial and teaching staff. However it should be noted that of those management staff that gave a positive response, 36% only slightly agreed.

Children were not asked whether there were enough small group rooms. They were however asked whether there was a 'special' room to go to when they needed extra help. A significant majority of children agreed that there was a room to go and it was a pleasant place, although often used for other purposes. The positive response from children towards having a 'special room' accords with the teachers' need for enough small group rooms to accommodate the needs of children with additional requirements.

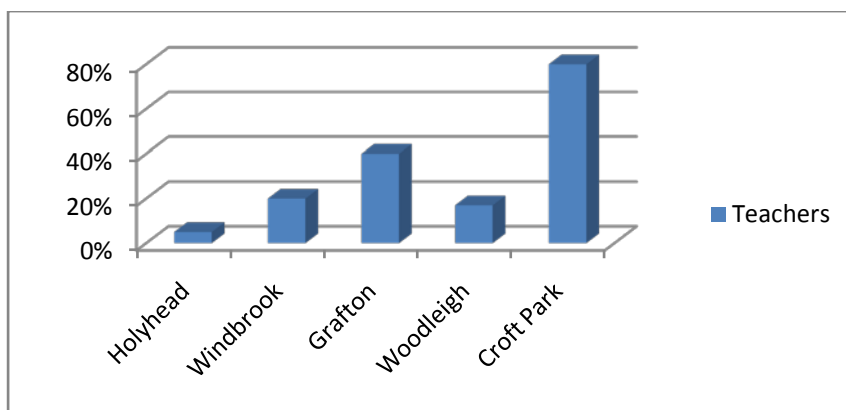


Figure 34 Teachers satisfied with number of toilet facilities

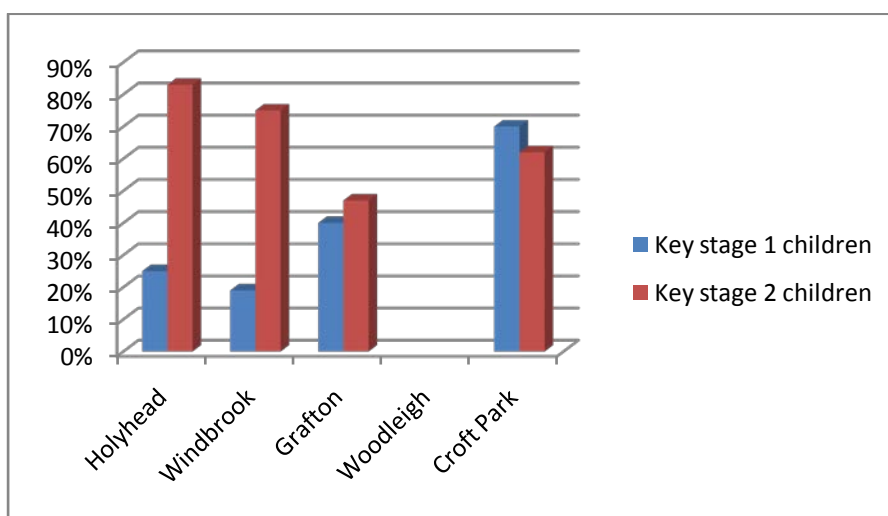


Figure 35 Children's positive responses to the question 'Are toilets nice to use?'

Like other seemingly peripheral aspects of the design of schools, the planning of toilet provision is essential to ensure good organisation of the day. It is also crucial to the dignity and welfare of children, both physically and emotionally.

Teachers in all schools agreed that toilets were readily accessible. The majority also agreed that the layout of toilets made them easy to supervise.

However, the amount of children's toilets were considered by a majority of teachers to be inadequate (see Figure 34). The number of toilets were calculated according to guidance issued by the government (D.F.E.S. 1996, D.F.E.S. 2004a), which recommends one for every twenty pupils aged 5-11, and one for every child or full-time equivalent nursery place under the age of 5. Teachers consistently considered this to be too few. Comments revealed that the low number of facilities lengthened

the amount of time it took to ensure all children had the opportunity to relieve themselves, which wasted time when children went out to or returned from break.

There was a difference between responses from key stage one and two children (Figure 35). Key stage one children generally found facilities unpleasant to use. This situation was exacerbated by what was considered to be the insufficient number of facilities, with children complaining that they often had to wait a long time. Discussions with young children also revealed that many found the lack of privacy embarrassing and complained that other children would often look over doors. This meant that some children avoided using the toilets when they felt vulnerable.

Key stage two children, however gave more positive responses, with almost three quarters stating that they were pleasant to use. A majority also stated that there were enough toilets. This possibly reflects the greater level of control older children generally have over bodily functions.

The disparity between the responses from teachers and children also reflect a difference in priorities. Teachers found the lack of toilet provision a problem due to time wastage. However this was not seen to be a problem by older children.

There was overall dissatisfaction with the number of toilets available at most schools, however the results indicated design flaws that were specific to Grafton. During the discussion with key stage one children some children indicated that they were sometimes scared to use the toilets because of the lighting. The emphasis on sustainability in design calls for energy efficiency. One of the ways this building aimed to achieve this target was in the use of lights that were movement sensitive. Lights automatically came on when they detected movement and turned off after a set time once movement ceased. However in the pupil toilets this meant that children had to walk into the toilets whilst there is no light, causing some of the younger

children to be too afraid to go on their own. Teachers therefore sent children to the toilet in pairs to alleviate their fears, causing disruption to lessons.

This problem could be simply solved, but written responses from teachers revealed that they felt their complaints would go unheeded. For example:

‘There is no point complaining because no one does anything about it’
(Questionnaire Cht 5)

‘No one listens to us. We were not consulted when the school was planned. They just steamrollered ahead.’ (Questionnaire Cht 7)

These responses indicate the high level of dissatisfaction amongst staff regarding the school build and may explain the high staff turnover since the school was built.

5.3.3 Teaching and Learning

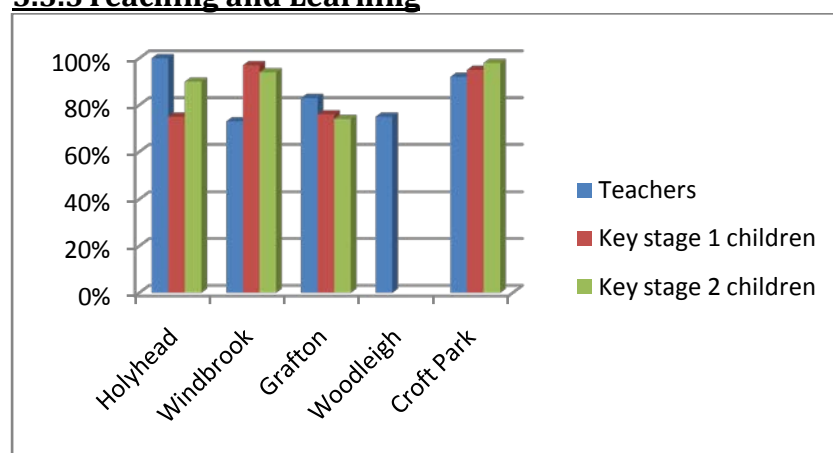


Figure 36 Positive responses to whether the classroom supports teaching and learning

The classroom is where most children will spend the majority of their time during the school day. It is essential therefore that the design of the classroom accommodates the necessary requirements to support a flexible approach to learning and teaching as well as providing an environment that will be physically comfortable and meet the social needs of children. Questions regarding the suitability of the design of the

classroom therefore formed a significant part of the POE for teaching staff and children (Figure 36).

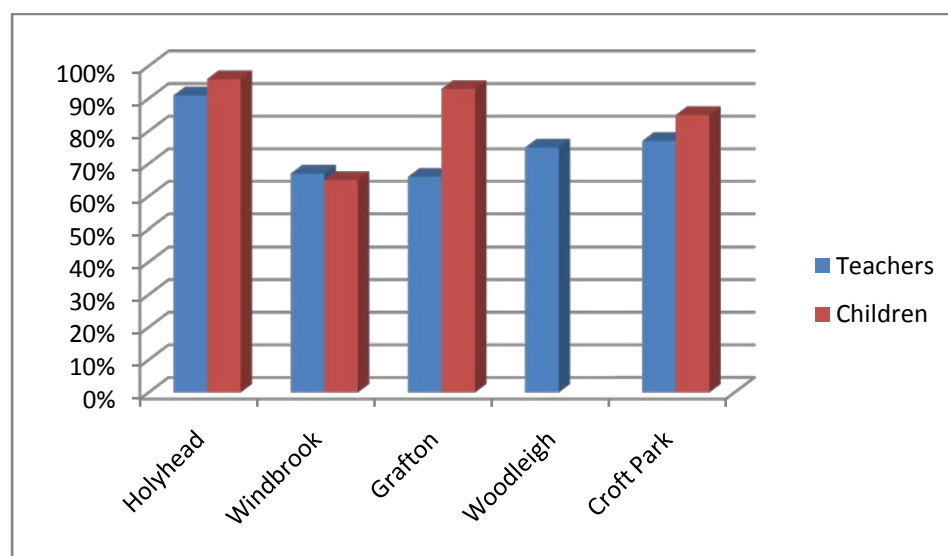


Figure 37 Positive responses to question of satisfaction with size of classrooms

As the results indicate, a significant majority of both teachers and children felt that the classrooms built according to the model brief, which incorporated government guidance on area size (D.F.E.S. 1996, D.F.E.S. 2004a), were of an adequate size (see Figure 37). Each pupil is allotted 2.1m² for the basic teaching area (classroom). However some of this area allocation was used in Coventry to accommodate a shared teaching area, the size of which varied according to the school.

Key stage one children were asked about classroom size as part of the Storybook stage of the evaluation and were asked to express their views orally, which were then noted and analysed. The results supported the findings from key stage two children and adults; classrooms were generally considered to be of sufficient size to accommodate the needs of the teachers and children.

The primary function of a classroom is to support teaching and learning. Teachers were asked several questions pertaining to provision for these vital purposes.

Teachers and teaching assistants felt that their classrooms generally supported whole class teaching and small group work. In addition the designs were felt to facilitate teaching and learning, and assist in the delivery of the curriculum. The results indicate that in most schools, classrooms built to the model brief are broadly achieving the aim of providing a space that supports the educational goals of the school and the local authority, although the results indicate variability with the level of satisfaction, with Croft Park achieving the greatest approval from staff.

Both key stage one and two children were asked a general question about whether their classroom was a good place to work and learn. In both key stages children gave an overwhelming positive response. Open questions and discussions with the children indicated that children had a sense of the classroom belonging to them. Children frequently spoke or wrote about 'my' or 'our' classroom rather than 'the classroom', indicating a sense of ownership. Discussions with key stage one children revealed a sense of pride about their classrooms, for example on occasions insisting on giving the author a guided tour of the room, pointing out aspects they particularly liked, frequently citing displays of their own work or the role play area as favourite aspects. The connection children feel with their classrooms appears to be more important to children than the specific design features. A fostering of children's 'friendship with place' (Chatterjee 2005) is important to enhance the experience of school and should be augmented through a design process which includes the views of children.

Sliding doors

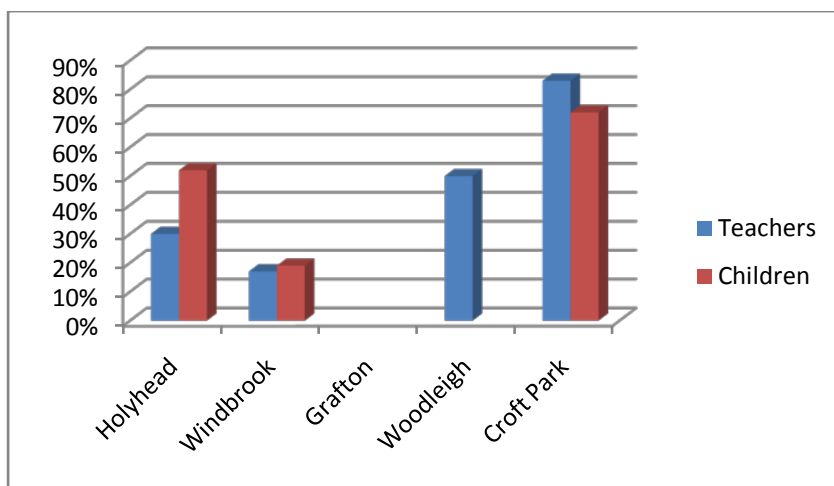


Figure 38 Sliding doors - positive responses to the question 'Are sliding doors a good idea?'

Grafton School did not have sliding doors as part of its design and layout, it is therefore excluded from the following discussion.

There were clear differences in the responses to the question of the positive contribution the inclusion of sliding doors make to the classroom environment (Figure 38). Windbrook, for example had a positive response from children and adults of less than 20% whereas Croft Park had over three-quarters of both adults and children providing a positive response. The reason for these differences needs further examination.

When asked to provide comments about what they thought about the school building, many teachers at Windbrook said that they dislike having doors between classrooms. Some of the most common comments were that they were distracting for students and rarely, if ever used. This was supported by the results from the children in key stage two, with 81% stating that the doors were only ever opened on special occasions. Informal discussions with teachers revealed that because the school is a single form entry (that is it only has one class per year group) there are very few occasions when classes will be conducting similar work or activities. It may

be that Coventry should only provide sliding doors if they are to be situated between classes in the same year group to allow for collaborative work.

Another issue was that the glass panels that made up the largest section of the dividing doors allowed visibility for the children into another class which caused a great deal of distraction. Teachers alleviated this by placing posters and children's work on the glass to prevent children seeing through to the next classroom. At Holyhead School some teachers had placed book cases in front of the sliding doors, rendering them impossible to use. When asked why this had been done, the teacher commented that teachers liked to have their own space, with little intrusion from others. The more open approach encouraged by the inclusion of the doors was seen as invasive and did not fit in with the teaching practice in the school. As discussed in the section on storage, additional book cases were seen as more important than having usable sliding doors. In Holyhead School alone approximately £70,000 had been spent on the inclusion of the high specification, sound-proof, sliding doors. Teachers commented that this money would have been more effectively spent elsewhere and that this design principle should be more open to negotiation with individual schools, depending on their needs.

A key feature of the model brief is the inclusion of sliding doors between classrooms which accommodate children from the same key stage. This disparity between the direction taken by the local authority and the perceptions of teachers using the facilities indicates the difficulties associated with applying a universal principle to all cases. It raises the question as to the applicability of this particular design feature in such distinct schools.

Key stage two children, apart from those who attended Grafton, were asked if their classroom had sliding doors. Over 20% of children gave a negative response,

although this feature was in fact included in their classroom design. This indicates their low level of use within some classrooms. Clearly there is a discrepancy, in this instance, between the need for flexibility propounded by the local authority and the everyday teaching practices that happen in the classroom.

Despite the lack of use of the doors, children generally thought that in principle the inclusion of the doors were 'a good idea.' This was the case in all schools who were asked, indicating a difference between the response of adults and children to this particular idea.

Shared areas

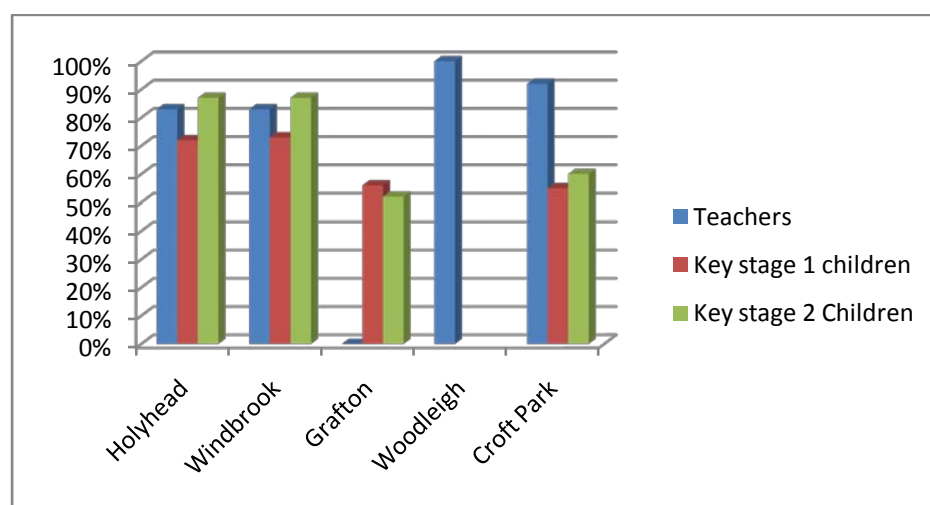


Figure 39 Positive responses to shared areas

The provision of a shared area, supplementary to the area provided in the classroom in order to provide additional spatial flexibility is a key design principle of the Coventry model brief.

Over three quarters (76%) of teachers gave a positive response to the statement 'Having a shared area outside the classroom helps teaching and learning'. Further

examination of the results revealed that the majority of negative responses came from Grafton School (Figure 39). This contrasted with Croft Park where almost all the teachers responded positively to this design feature. Clearly in principle the shared area can make a contribution to the facilitation of the educational functions of the school. However, as an examination of the results reveal, this is contingent upon the specific design and the particular requirements of the school within a particular context.

All teaching staff at Grafton disagreed with the statement 'Having a shared area outside the classroom helps teaching and learning', with half of the respondents strongly disagreeing with the statement. The reasons for such strong disapproval were elucidated in the written comments by teaching staff. The reason that was most frequently cited was the actual shape of the school design. The shared areas outside the classrooms took the form of a circular continuous corridor (See Figures 41, 42 and 43).



Figure 42 Children in curved corridor. Note poor sightlines.



Figure 41 Shared area at Grafton

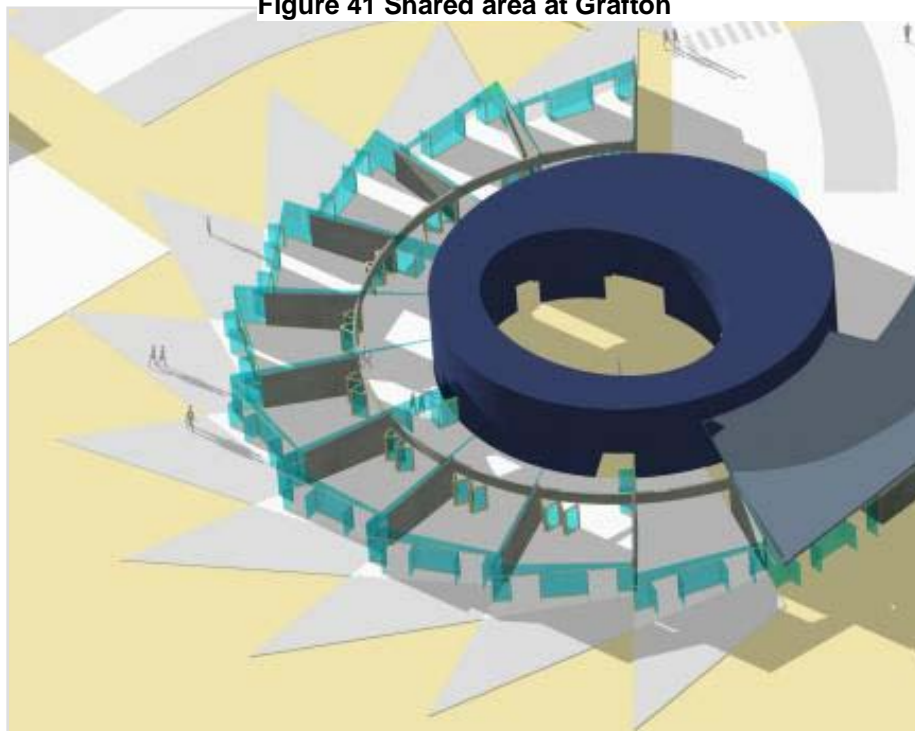


Figure 43 Architects drawing of Grafton, indicating ovoid layout.

As can be seen in Figures 41, 42, 43 Grafton's shared areas are situated in the corridor that runs in a circular shape between the ovoid assembly hall and the classrooms which are situated on the external wall of the school.

According to the school's most recent OFSTED report:

'Children enter the nursery class with standards well below those expected, particularly in their personal, social, emotional and communication skills.' (Ofsted 2006a:2)

This was demonstrated in the poor behavioural skills exhibited by many of the children, which was also highlighted in the report:

'a number of parents expressed some concern about behaviour and bullying,' (Ibid: 3)

Teaching staff expressed dismay at the design of the school which they found exacerbated the behavioural problems of many of the children. All teachers strongly disagreed with the statement 'The design of the school building supports the behaviour policy of the school'. Teachers said that the corridors provided a circuit to run around for children who wished to evade adult supervision. According to adult comments children would frequently use the corridor to hide from adults. The curved construction of the walls led to poor sight lines, as may be seen in Figure 60. Adults therefore could not supervise children as they walked around the school. The problem was further worsened by the hall which was in the centre of the school. This had four entrances and exits, each accessible from the curved corridor. According to

staff comments children on numerous occasions would evade adults who were trying to supervise them by taking a route through the school via the hall. One of the doors was situated next to the school entrance. On several occasions children had opened the external door of the school and exited the school premises. This not only caused difficulties in supervision and promoted poor behaviour in the children, it led to a situation which had the potential to be extremely dangerous.

One written comment from a teacher indicated the level of stress caused by the design:

‘Sometimes it’s a living hell. The children are in danger and we have to be constantly on our toes. Some children, as soon as our back is turned will be off and we cannot see where they are. Even if we see where they have gone we cannot always catch them up, or they may dart through the hall.’ [Questionnaire identity Ch.t.3]

Another stated:

‘The design is all wrong. The circulation space is a race track. Whoever designed the school has clearly never worked in a school, or has not asked teachers what is needed’ (Questionnaire identity Ch.t 7)

The researcher witnessed an event at the school which highlighted this issue when on a visit to the school. A child ran out of the assembly hall and it was not possible for staff to see which way he had run in the corridor because of the curved design which inhibited their view. Therefore two members of staff had to pursue the child, one in a clockwise the other in an anti-clockwise direction, in order to ensure the

child did not exit the school or otherwise put himself in danger. This meant that the rest of the class were left in the hall with inadequate supervision. The event highlighted the immediate and radical effect poor design has on the everyday practices and ethos within the school.

The specific context of the school was not adequately accounted for during the design process. The catchment area which the school serves has a collection of specific problems, relating both to its socio-economic status and its history of community tensions regarding the school. The designers were not compelled to take the contextually particular nature of the schools' needs into account. The design, therefore, overlooked the needs of this particular community. For example the connection between socio-economic deprivation and behavioural problems of children has been made (DCSF 2009c).

However the design of the school did not account for the likelihood that a number of children would enter school with behavioural problems, and instead exacerbated the potential for difficulties by an inappropriate layout.

The majority of children in all schools thought the shared area was 'a good idea' although the results from key stage one children indicated approximately a third of the children did not agree. Further exploration through discussion with children revealed that this was mainly due to younger children spending the majority of their time within the classroom with only limited access to the shared area, always under adult supervision. It would appear that teachers and teaching assistants of children in key stage one, although agreeing with the concept of a shared area, were reluctant to allow young children to venture outside of their immediate supervision. It may also reflect the need for young children to develop an intimate relationship or 'place attachment' with place on a smaller scale.

Several key stage two children at Grafton also wrote that other children were 'naughty' in the shared areas. Due to the layout the sinks in the shared area were situated out of the sight of classrooms, making their supervision difficult. Children's written comments related several incidents where taps had been deliberately rotated over work-surfaces and left on full flow in order to flood the shared area. Due to the poor sight-lines this had not been noticed by staff until considerable water damage had been done.

Clearly, the principle of the shared area may be considered useful; however its design should ensure effective supervision and remove the possibility for accidental or deliberate damage.

Storage

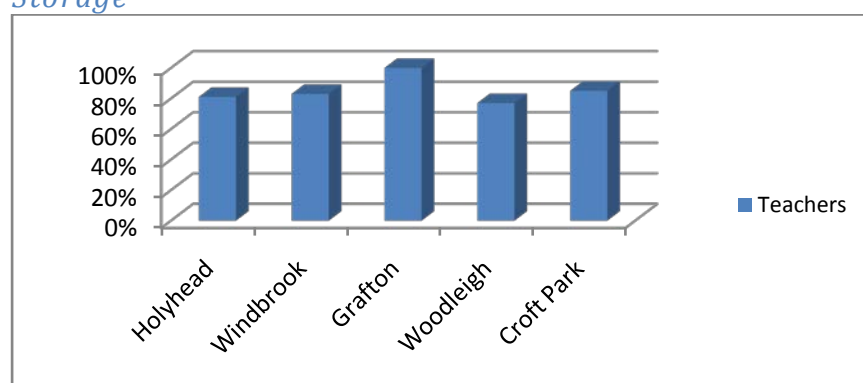


Figure 44 Dissatisfaction with amount of storage in classroom

The great majority of all teachers thought that storage was inadequate in their classrooms (Figure 44). Comments from staff and children indicated that this often led to messiness, or a disordered appearance to the classroom. This was particularly the case at Grafton School, where all teachers and teaching assistants were dissatisfied with the amount of storage space. Whereas in the other schools storage space was allocated in the classrooms, at Grafton the designers and the head teacher had taken the decision to centralise storage space. All equipment was stored centrally and little was available within each classroom. On a visit to the school the

researcher was shown the central storage space which was situated within the shared area outside the classrooms. When the door was opened a large amount of equipment was seen to be stacked against the door, which fell out into a heap onto the floor. Shelves were over-burdened and much of the equipment and books inside was inaccessible or disorganised to the extent it would be impossible to locate an item when required.

The lack of storage in all schools led to an overspill into classroom and corridors. When storage space became full, equipment and books were often kept in spaces in the classroom and shared space designated for other purposes, for example books frequently had to be permanently stored on work surfaces. Comments from teachers indicated that problems highlighted in the pre-model brief schools had not been alleviated and that the lack of storage again led to problems with a disorderly appearance in the formal working areas of the classroom.

5.3.4 Play and Social Areas

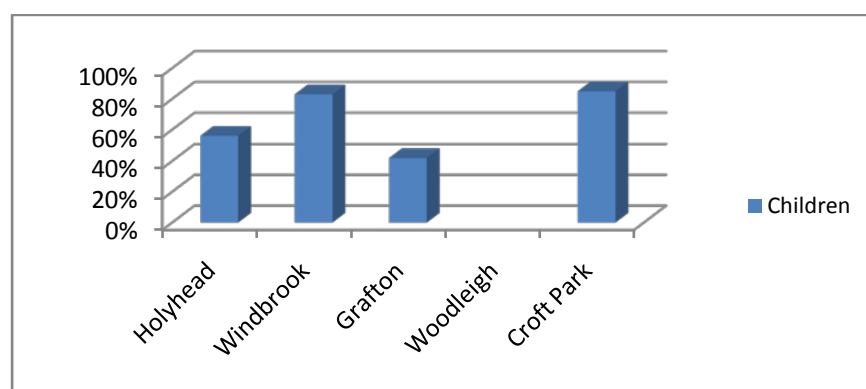


Figure 45 Children who thought the playground was 'a good place to play'

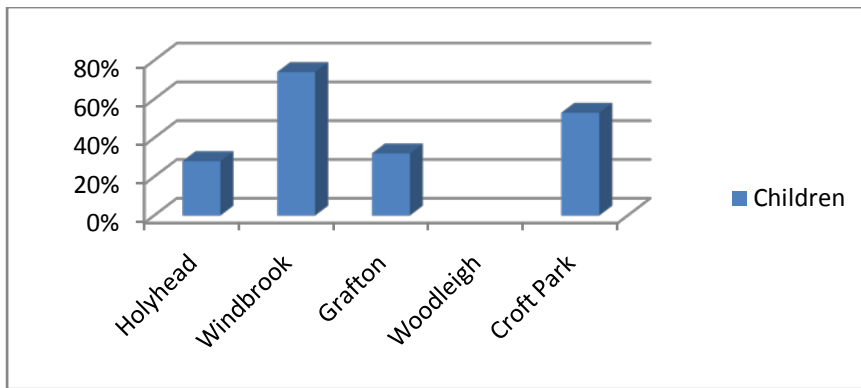


Figure 46 Children who thought there were 'lots of things to choose from'

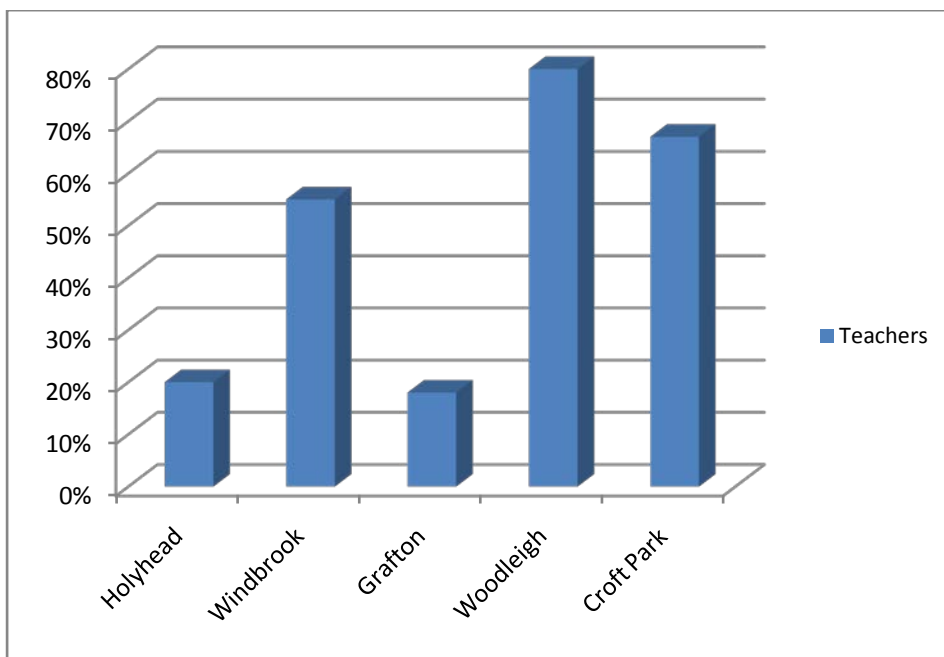


Figure 47 Teacher satisfaction with outdoor play provision

Outdoor provision is considered to be essential for primary schools. The curriculum for foundation stage children states that they should have access to an outdoor classroom.

'Where possible, practitioners should allow children to move spontaneously between indoor and outdoor environments. Children will improve their coordination, control and ability to move more effectively if they can run, climb, balance, swing, slide,

tumble, throw, catch and kick when they want to and are motivated and interested in doing so.’(D.F.E.S. 2000)

Questions were asked about the outside space and were included on the questionnaires for teachers and lunchtime supervisors as well as the scheme of work for children.

Children at Windbrook and Croft Park had the greatest levels of satisfaction with the playground, with over three quarters stating that the playground was ‘a good place’. Children at these schools also thought there was a good range of things to do on their playground (Figures 45 and 46). Grafton and Holyhead, however had lower levels of satisfaction. These schools were two of the more recently built primary schools in Coventry. Neither school had time following the initial build to develop their playgrounds to an entirely satisfactory level. Further discussion of this issue will be presented later in this section.

The number of respondents for the questionnaire for lunchtime supervisors and kitchen staff was low (twenty in total) therefore the results are not definitive, and can only give an indication of attitudes towards the outside area. A large percentage of respondents gave a ‘not applicable’ response, due to the questionnaire being given to both lunchtime supervisors and kitchen staff. This was an error in the questionnaire design, which has now been addressed.

Results from the small sample of lunchtime supervisors indicate that playgrounds are easily supervised, spacious and safe. There is, however, generally a paucity of large play equipment.

The design of the outdoor space received a mixed response from teachers and teaching assistants, implying lack of consistency in the approach to the design of the

playground. Holyhead and Grafton schools elicited consistently negative responses on questions regarding the design of the outdoor space (Figure 47).

The outdoor space was criticised in several schools for the lack of shelter it afforded. The exception was Woodleigh, where each set of classrooms had a canopy outside to provide shelter from excessive sun and rain. In other schools this was considered by adults to be an omission, particularly concerning younger children as it is considered an essential part of the foundation curriculum to have access to the outside on a daily basis.

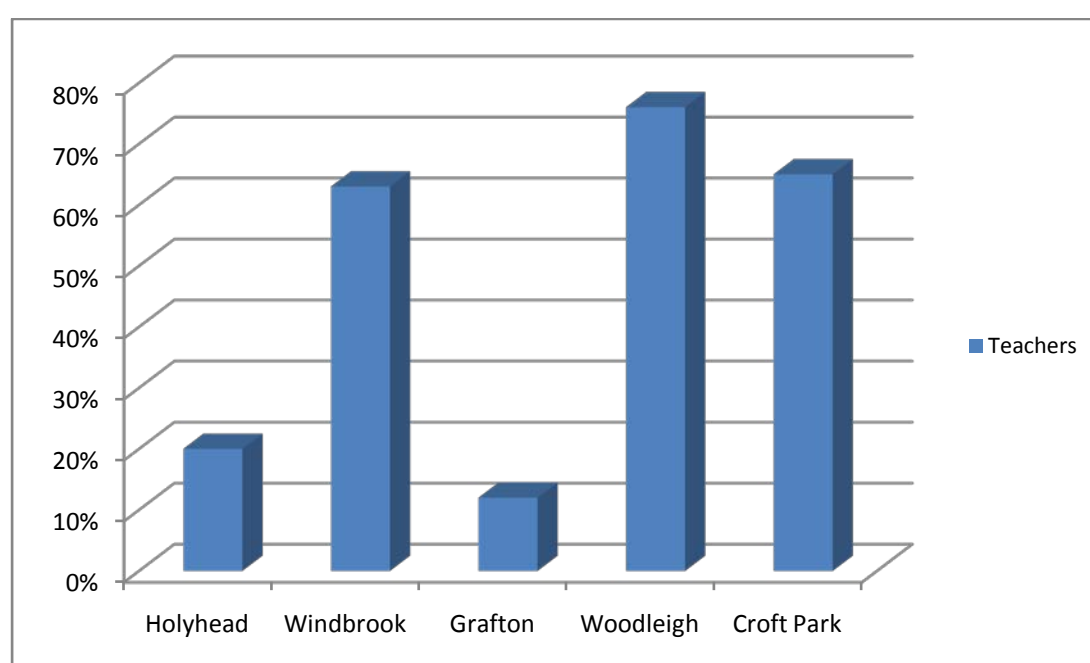


Figure 48 Satisfaction with opportunities for learning provided by the environment

The opportunities for learning provided by the wider school environment also elicited a mixed response (Figure 48). This too was dependent upon the individual school, again implying an inconsistent approach to outside provision, although the majority

of teachers and teaching assistants agreed that it enabled children to appreciate the natural environment. Just under half of children agreed, highlighting the difference between children's perception of the outside space to that of adults.

Children were also asked about their experience of the outside space. Some 83% said that there was somewhere to play football, although almost half said that this would disturb other children. Football is clearly an important part of the experience of the playground for many children, mainly boys. However it would appear that the design of playgrounds in Coventry's new schools has not addressed issues that were revealed in the first stage of the research in pre-model brief schools (see Chapter Four) when several children complained that playgrounds were dominated by games of football played by a minority.

The responses from children regarding outdoor provision varied with some schools receiving more positive responses than others. This inconsistency reflects the ad hoc nature of landscape design in schools, which is often seen as something to be added on once the building is completed. For example, Windbrook was the first school to be built following the introduction of the model brief and by the time of the research was approximately ten years old. During this time the school had bought several pieces of outdoor play apparatus and had built up a resource of small play equipment, alleviating the dearth felt in the more recently built schools.

An interview with a landscape designer who specialises in primary schools revealed that:

'Often, because we're the last thing on the list, by the time comes for landscaping, most of the budget has gone. It often feels like an afterthought...sometimes this is due to overspend when the buildings are being built and by the time it gets round to

thinking about the outside we're told 'sorry, you've only got half of what you were originally told' or something.' (Andrew, landscape designer)

The head teachers at Woodleigh and Holyhead reiterated this, explaining that finance for most of the landscaping came out of the schools' own budgets and fund raising after completion of the school. Holyhead had been left with one area of the playground which was unusable when the school moved into the premises. Rubble and leftover building materials protruded through the grass when the children played on it.

Woodleigh, despite being in an area of extreme socio-economic deprivation, had raised finance for the development of the playground through parental fundraising. Much of the landscaping work had been achieved with the direct help of parents. This approach relies on the goodwill of parents and a strong relationship between them and school management. In other schools where parents were not as willing to contribute time and effort, children would not have access to a fully developed playground.

Clearly the appropriate landscaping of the outside spaces must be included as a central part of the school's design, with a budget ring-fenced for this purpose, which will not be used if there is overspend elsewhere.

The landscaping should also take into account the location in which the school is situated and the experiences of the children. For children who have limited access to open space or natural surroundings in their home lives, the design of the playground should reflect this deficit, ensuring that children are given ample opportunity to interact with natural materials in an open 'disordered' way.

5.3.5 Safety and Security

In contrast to all other schools, the issue of security was a major cause for concern at Grafton with 93% of all adult users providing a negative response to the statement 'The school is secure', with 50% of respondents strongly disagreeing (see Figure 49).

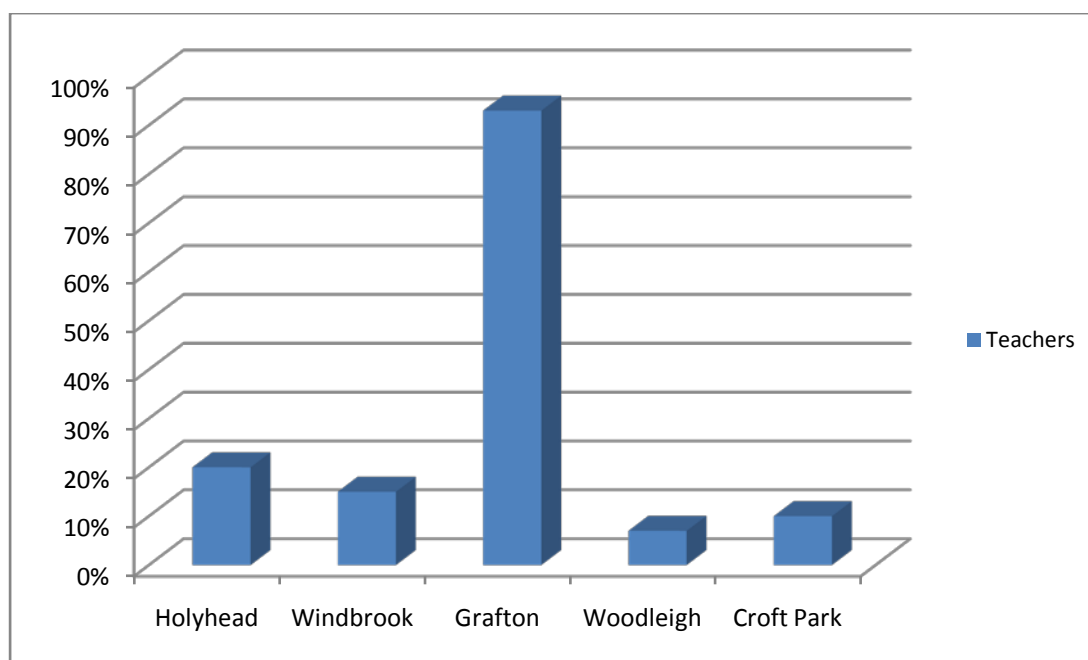


Figure 49 Negative responses to statement 'The school is secure?'

Again the extended answers given by adult users cast light on the reasons for this response. As well as complaints from teachers regarding security problems caused by the internal design of the school, several parents indicated that they felt the outside space was insecure or unsafe due to the inability of staff to effectively supervise the entire playground. Teachers and parents stated that the fencing was considered to be inadequate and was often vandalised leaving holes enabling children to climb through. The playground frequently flooded, causing safety problems. The low roof on the classrooms enabled easy access onto the top of the building and several local young people had regularly been found on the roof,

leading to potential danger for the young people and the potential for damage to the building.

This, once more, highlights the inadequacy of the design and of the process which failed to account for the potential problems within the specific geographical location. In this case the design did not adequately account for the physical environment that was prone to flooding, and the widespread social problems of vandalism and burglary within the immediate vicinity of the school. This indicates a lack of understanding of the needs of the local community and the insufficient engagement of local voices during the planning stage.

Teachers were also asked whether the classroom enabled them to feel in control of the class (Figure 50).

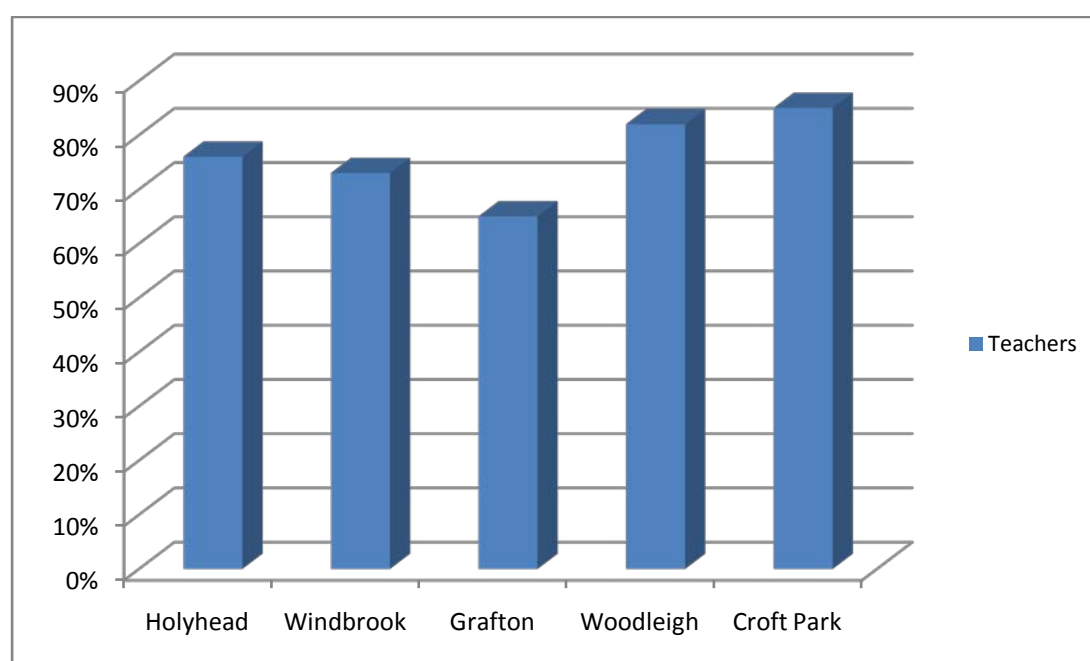


Figure 50 Positive responses to the statement 'The design of the classroom helps me feel in control'

A large majority of teachers felt the design of the classroom facilitated appropriate control over their class. All of the classrooms had a very simple square or rectangular layout, enabling children to be monitored whilst they were in the

classroom. Problems were indicated when children were involved in activities outside of the classroom environment.

Key stage two children were asked to select four words from a list of fourteen words to describe their classroom. The list of words included the antonyms 'safe' and 'scary'. As can be seen in Figure 51 children generally found the classroom a safe place to be.

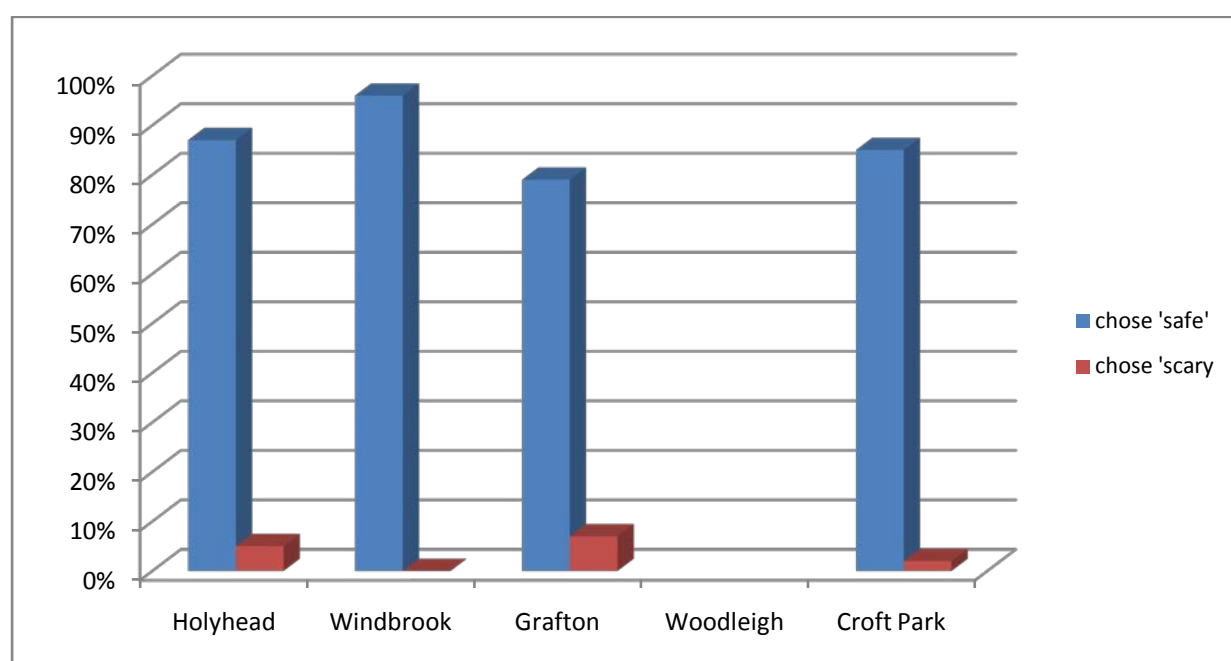


Figure 51 Key stage two children who chose the description 'safe' or 'scary' to describe their classroom

A very high proportion of children chose 'safe' to describe their classrooms, with very few choosing to describe this place as 'scary.' However, other areas in the school were considered less secure.

Key stage two children were asked to choose from a list of ten words that described their cloakroom. Amongst the list were the words 'dangerous' and its antonym 'safe'. A high proportion of children described the cloakroom as 'dangerous' (see Figure 52).

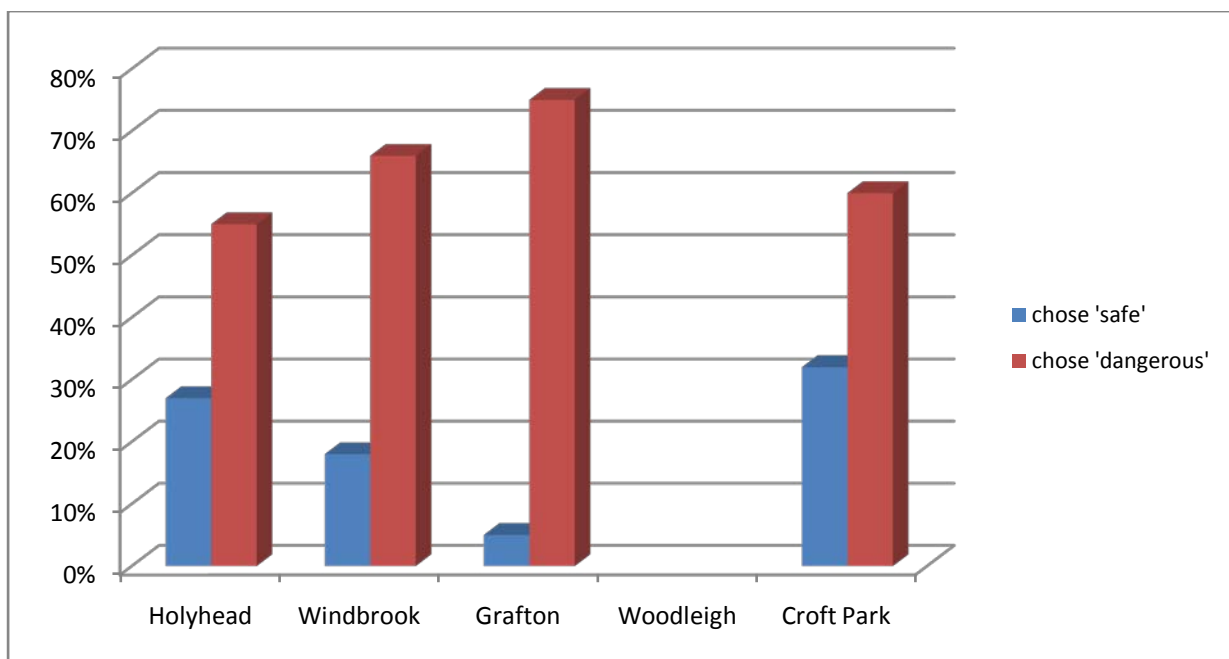


Figure 52 Key stage two children who chose 'dangerous' or 'safe' to describe the cloakroom

Children who chose 'dangerous' frequently also chose 'uncomfortable' and 'squashed' to describe the cloakrooms, indicating the vulnerability children can experience when spaces are overcrowded. Children's written comments frequently cited the cloakrooms as a place they would like to change. One child's written comments from Holyhead School expressed the view that cloakrooms were also dangerous due to the inability of teachers to always monitor the cloakrooms effectively.

'Sometimes we get pushed. I bumped my head and the teacher was cross but she didn't see who did it.'

Teachers were also concerned that cloakrooms were not secure (Figure 53).

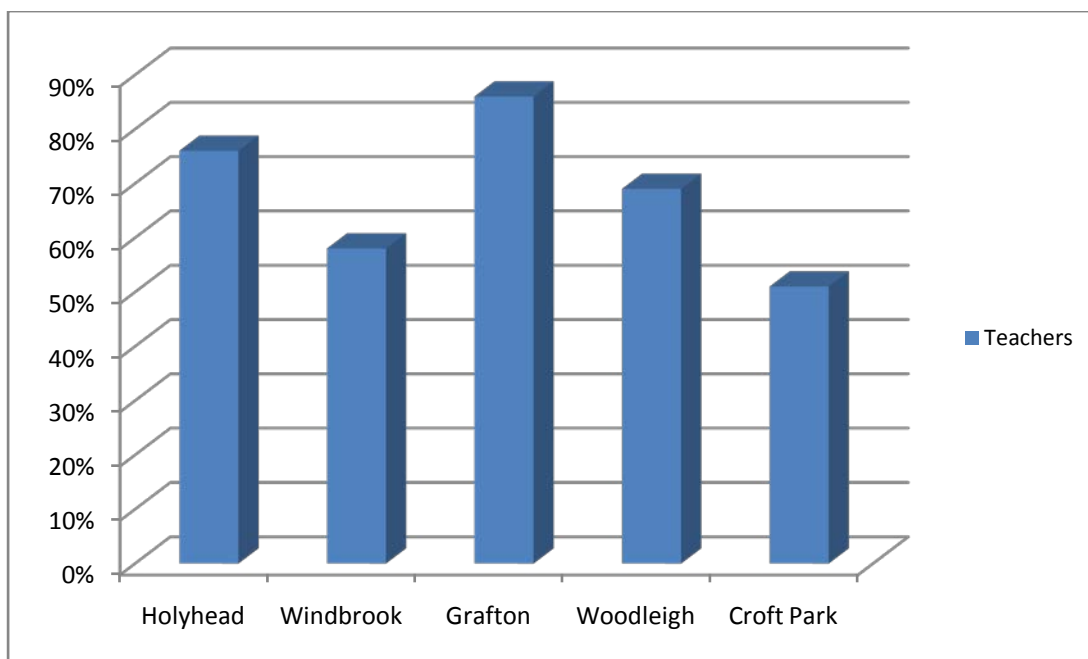


Figure 53 Negative responses to the statement 'Cloakrooms are secure'

Written responses revealed that teachers felt that cloakrooms were insecure for two reasons: they were often cramped which led to children having accidents, secondly, the difficulty supervising the cloakrooms led to several incidents of theft of children's property.

To alleviate these problems cloakrooms need to be spacious enough to ensure children can access their belongings quickly and easily. They should also be positioned so that teachers and other adults can oversee access to avoid the possibility of pilfering.

5.3.6 Design process

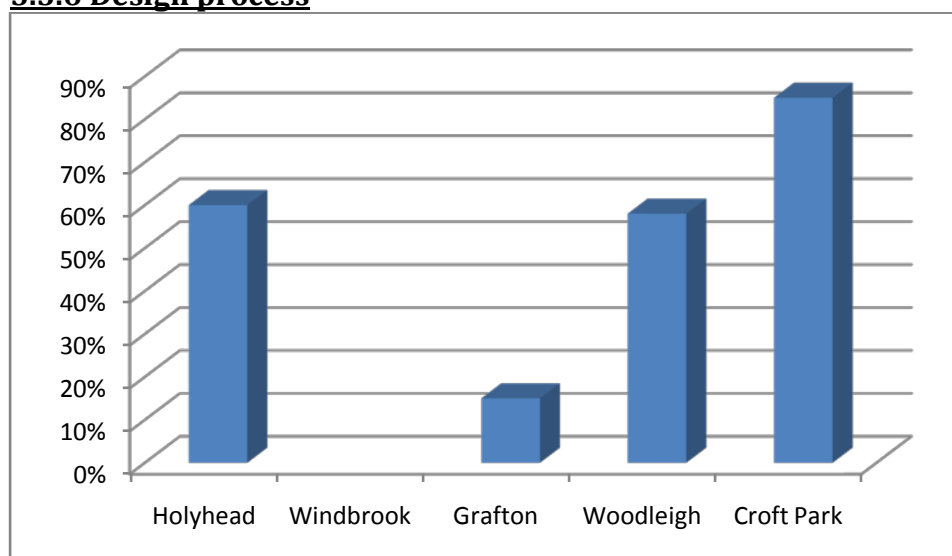


Figure 54 Levels of satisfaction with involvement in design process (adult stakeholders)

Responses indicated that a large percentage of respondents felt that being involved with the design process was something that was not pertinent to them. It is not possible to say whether this was due to the stakeholders not being employed by, or a parent at the school at the time of the design, or whether stakeholders felt that the design process was simply not their concern. However, most parents stated that despite having no involvement with the design process, they were satisfied with the level of their involvement. Windbrook is excluded from this part of the discussion due to the fact that it was the first school built and very few parents or members of staff were connected with the school at the time of design and build, including the head teacher who was appointed subsequent to the school completion.

Of the respondents who did say they had been involved in the process, the largest percentages expressed positive attitudes towards their involvement in the process and felt that the designers accommodated the needs of the school (Figure 54). The exception to this was Grafton School, where the lack of consultation was considered a problem, particularly by staff, several of whom commented that they had not been

involved in the design stage and this was problematic. As indicated earlier the school was built as a result of a merger of two existing primary schools. Of the respondents who were stakeholders at the time of the planning stage 72% stated they were not consulted at the design stage. 93% of the people who were consulted stated that their opinions were not taken into account. 87% of all adult stakeholders said they did not believe the designers took into account the needs of the school when developing the design. 100% of all respondents who were stakeholders during the design stage felt that they were not consulted during the design stages. 79% of these respondents were not satisfied with the amount of say they had in the design process. Clearly stakeholders did not think their opinions were taken into account. The general dissatisfaction expressed by many stakeholders with the design was coupled with a sense of disempowerment. Several teachers indicated that decisions were made with little or no consultation. They expressed the opinion that had their experience and opinions been accounted for then the school would have been more appropriately designed:

‘The designers and powers that be do not listen to the people who have to work here. Can you please ask why they did not come to speak to us about what we would want?’ [Questionnaire identity Cht 7]

Grafton contrasted with the other schools in the high level of dissatisfaction with the design process. Although the same process for the development of a design was followed in accordance with the strategy outlined in the model brief, the specific context in which the school was built led to a heightened sense of exclusion, which as the responses to some questionnaires from teachers and parents indicate, amounted to anger about the school design. The context, including the geographical

location, the community tensions following the school closures/amalgamations and the contentious nature of the school design and layout indicates the need for greater stakeholder involvement in order to ameliorate school design.

Both staff at the school and a member of the strategic planning unit at Coventry City Council expressed the view that the head teacher of Grafton viewed the build as a personal project, a way to 'make a mark' on the local landscape. His vision for innovative design in order to leave a lasting visual impression took precedence over the needs of other stakeholders. This contrasted with the experience of the Croft Park rebuild. The head teacher at Croft Park explained that he had insisted on involving several members of staff in the design process and had held regular consultations with parents and interested parties in the community. The results of these consultations were then fed into the plans for the new build. The difference in levels of satisfaction with the design process and the subsequent school build is apparent in the results of the evaluation.

The results from Grafton School contrasted markedly with Croft Park, where the head teacher had chaired a design committee throughout the design and build stages alongside the school architects, members of the local authority and members of staff. Staff were consulted regularly for their views throughout the design and build stage. Other stakeholders were consulted and kept informed of decisions taken. The level of involvement resulted in a high level of satisfaction with the design process. It should be noted that Croft Park consistently had amongst the highest levels of satisfaction for other aspects of the school building. It seems reasonable to conclude that meaningful engagement in the design process is likely to lead to a greater level of approval amongst the stakeholders.

None of the schools had directly involved children in the design process. As will be discussed in Chapter Six this is an omission which should be rectified.

5.3.7 Aesthetics

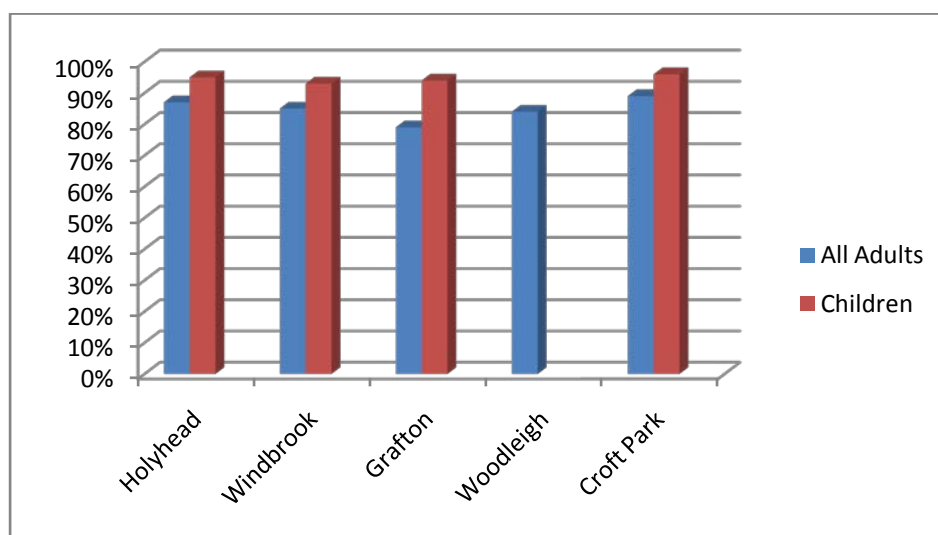


Figure 55 Adults and children satisfied with the aesthetics of the school building

Some methods of evaluation, significantly the Design Quality Indicator, have placed a great deal of emphasis on the aesthetic quality of school buildings as an indicator of the buildings' success. Although the POE developed and used in this research strongly emphasises the functionality of the building in terms of supporting the needs of all users, it nevertheless accepts that the appearance may contribute significantly to positive general attitude towards the school.

There was a strong consensus that all the schools were aesthetically pleasing. The results to open questions for adults and children supported this finding. Key stage two children were asked to say what they particularly liked about the school building. Responses indicated the level of satisfaction children felt about the appearance of the school (Figure 55). When asked what they would change about the school no child expressed a wish to change the appearance of their school.

It would appear that designers using the model brief are producing schools that are universally considered to be aesthetically pleasing.

5.3.8 Ergonomic factors

Thermal Comfort

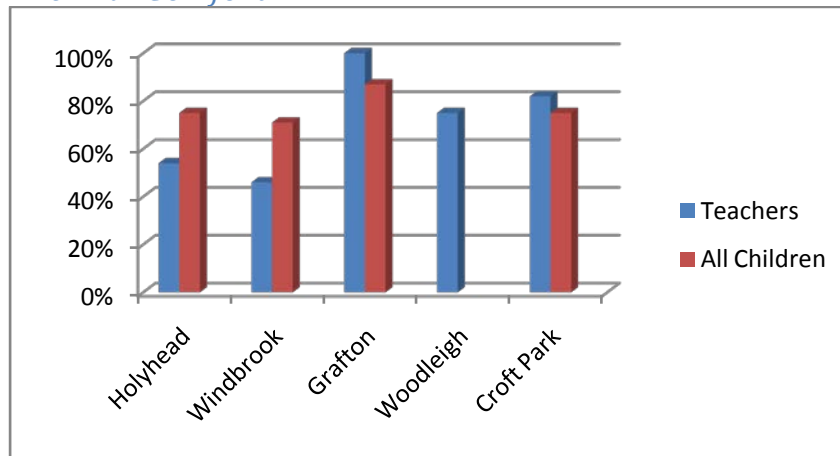


Figure 56 Thermal comfort - percentage of stakeholders dissatisfied with thermal comfort in classrooms

Poor temperature control and thermal comfort can have a detrimental effect on the learning capabilities and outcomes for children (Lofstedt *et al.* 1969, Griffitt and Veitch 1971, Lee and Chang 1999, Wyon 2004, Wargocki, Wyon *et al.* 2005, Jaakkola 2006). It is essential that children work in classrooms that meet their thermal requirements. There is some evidence to support the idea stated in informal conversations with teachers that adults are less sensitive to changes in temperature than children (Ueda *et al.* 1996). This means that sometimes adults are comfortable in a classroom where children experience uncomfortable levels of heat. The lack of control for both children and adults in temperature is obviously an issue that needs to be addressed by designers.

As the results indicate (Figure 56), there was a high level of dissatisfaction with the thermal comfort in all schools. A significant majority of adults also indicated that

there was a lack of control over temperature in the teaching areas. Temperature was controlled centrally in all schools with no opportunity to control it at a local level. The results revealed that frequently thermal discomfort was caused by feeling too hot, even during the winter months, when external temperature was low. Teachers stated that they frequently opened windows to lower the temperature, often when the central heating was on, due to a lack of access to a thermostat. Having a more locally controlled thermostat would facilitate comfort as well as contribute to lower fuel consumption by the school.

The problem was exacerbated in two of the schools by the inclusion of under-floor heating as part of the design, which according to several staff members exacerbated the problem of temperature control. For example one member of staff at Grafton said:

‘When the children sit on the floor, for example at story-time, you can see them getting hotter and more uncomfortable because of the under-floor heating. Sometimes the children get tired and lethargic because of the high temperature in the classroom.’ (Questionnaire identity Cht 10)

Other teachers cited examples of children actually falling asleep when they sat on the carpeted areas with under-floor heating. Although under-floor heating is considered to be aesthetically more pleasing than the use of radiators, it clearly causes problems in primary schools, where it is accepted practice for children to sit on the floor, therefore in close proximity to the heat source.

Results indicate the necessity for local control and the installation of traditional radiators or other alternatives to under-floor heating.

Acoustics

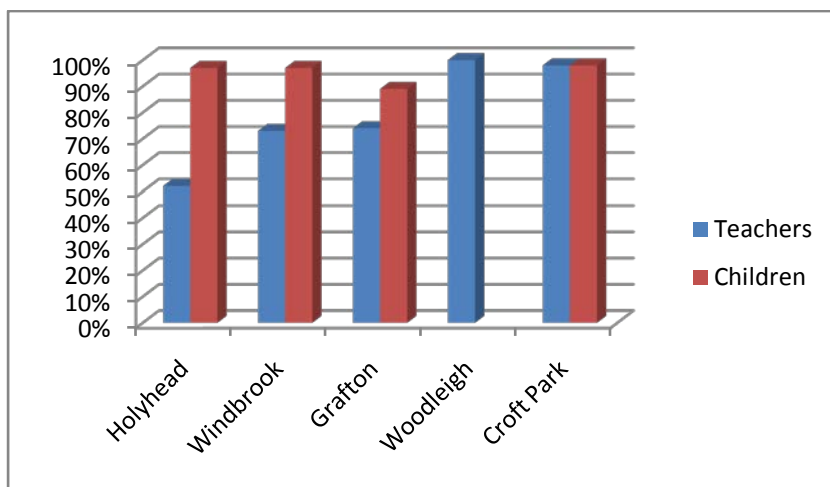


Figure 57 Level of satisfaction with acoustics in classrooms (teachers and children)

Acoustics in the classroom were generally perceived to be good by both teachers and children, with no particular problems arising from the research (Figure 57). This is to be expected following the implementation of guidelines on acoustics in schools issued by the government (DFES 2003a) and indicates a marked improvement on the negative experience of poor acoustics revealed through the initial case studies (Chapter Four).

Visual Acuity

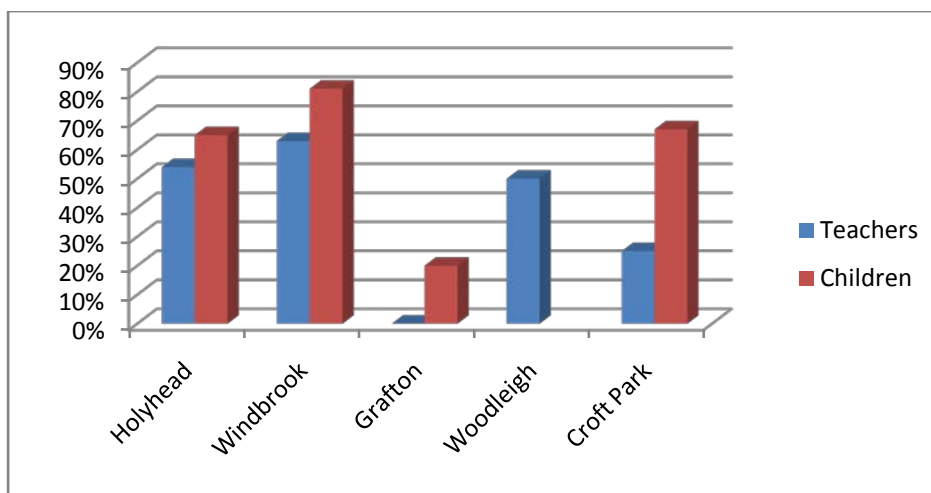


Figure 58 Visual acuity - percentage of teachers and children satisfied with ability to see whiteboard

There was considerable variability between schools on the question of visual acuity. There was also a difference between teachers' and children's responses to the question of visual acuity (Figure 58). Teachers gave a more negative evaluation than the children of their ability to always see the board, with the majority of teachers (65%) believing children are not always able to see the board. Almost three quarters of children said that they are able to see the board clearly. 92% of children said they are always able to see the teacher.

The variability between schools may be most clearly seen in a comparison between results from Windbrook and Grafton schools.

At Windbrook Most teachers (73%) said that there was enough natural light in the classroom; however 63.6% stated that they were unable to control this. The majority of teachers felt that children were always able to see the whiteboard, children agreed, with 81% stating that everyone was able to see the board clearly.

At Grafton responses from both adults and children indicated difficulties for children when looking at the interactive whiteboards in the classrooms. All teachers agreed with the statement 'Pupils cannot always see the whiteboard clearly'. This was in agreement with 80% of the key stage two children who answered no to the question

‘Everyone is able to see the board clearly.’ This will have a negative impact on teaching and learning.

Several adult respondents indicated the reason for the problem. When the school was built the architects claimed that the orientation of the school ensured that there would not be a problem with too much natural light in the classrooms, therefore none of the windows were fitted with blinds during the construction stage prior to occupation. However in the period immediately after the school was opened it was clear that many of the classrooms were almost unusable because of the excess natural light and the inability to control the amount of light in the classrooms. All teachers disagreed with the statement ‘There is not enough natural light in the classroom’ and disagreed that they were able to control the amount of light in the classroom, even after the fitting of blinds following complaints in the months immediately following occupation:

‘The architects lied. They said that we would not need blinds, but when we moved in it was unbearable because there was too much day light. The school had to fit blinds out of our own budget and they are still not capable of blocking out all the light.’
(Questionnaire identity Cht 8)

The design of the school has caused problems with visual acuity in the classrooms. There was also a great deal of resentment indicated in the written responses towards the architects and design team about this and other issues.

Most teachers at Holyhead felt that they had enough natural light in the classroom (91%), however some (27%) felt that they did not have enough control over it. This may account for the fact that 46% of teachers said that children could not always see

the whiteboard clearly. Glare on whiteboards is a problem in classrooms and may prove to be distracting to children who have to move places in order to see.

There was a difference in the perception of children and adults in terms of visual acuity which was consistent in all schools, with children generally being more positive about this aspect of their classrooms. Day lighting was good, with 91% of teachers saying that there was enough natural light in the classroom, but there was clearly a problem with glare in some classrooms as just over half said that they did not have adequate control over the amount of natural light, which caused glare on whiteboards.

5.4 Conclusion

Several conclusions can be drawn from the results of the post occupancy evaluation. These will be explored more fully in the following chapter, however this section will outline a summary of the findings. With the notable exception of Grafton, the new schools were thought to support good behaviour and a positive ethos. Classrooms were generally considered to support teaching and learning, both by teachers and children, who consistently chose positive words to describe the classroom. Children's experiences of school were generally positive in relation to their classrooms and children frequently showed a sense of pride and ownership of their classrooms.

Schools were universally considered to be aesthetically pleasing, which, as comments from the evaluation indicated, enhanced the sense of pride felt by children and adults in the school. Problems with poor acoustics, which had been a major concern in schools built prior to the model brief, had been alleviated in later builds. However the research did highlight some negative issues which the model brief does not account for.

The model brief does not allow for the geographical specificity of each of the schools and the particular needs of the local community. For example several of the schools were located in areas of extreme socio-economic deprivation, which is associated with social problems such as vandalism and other criminal activity. It is also associated with poor schools attendance, low pupil attendance and behavioural problems in children. However, as indicated in the results particularly from Grafton, this was not always accounted for in the school design. Neither is the necessity to account for the individual geographical location of schools referred to in the Coventry model brief document.

Similarly, the inclusion of the sliding doors was contingent upon the needs of the individual school, with some schools embracing them and using them regularly, whilst others used them infrequently if at all. This calls into question the applicability of a universal set of design principles that do not assess the individual needs of the school and its community.

Schools' responses to the appropriateness of shared areas were, once more, contingent upon the needs of the individual school. In most schools they were considered a good idea, but the needs of the individual school were felt in some schools to be subsumed by a principle that was imposed by the local authority.

Schools where there was a lack of consultation led to a sense that designs were inflicted rather than negotiated and resulted in the greatest levels of discontent. The most striking contrast is between Croft Park which consistently achieved high levels of satisfaction with the design features and Grafton where no effective consultation had taken place and the school design and location was viewed as an imposition by staff and parents. The consultation period and the mechanisms which can facilitate consultation or participation are not referred to in the model brief document. Its only

requirement is that the head teacher of the school should to be consulted in the design stage. There is no necessity for other stakeholders to be consulted. In order to accommodate the needs of all users and to potentially have a greater level of satisfaction with the school buildings this should be changed.

The need for children to have access to an outside play space which is both adequately equipped whilst maintaining a sense of 'wildness' for children to experience 'disordered', child-led play and exploration is considered essential. However the variability of the provision made indicates that the outside space is a secondary consideration, and all too frequently the budget has been spent before adequate play provision is installed.

In contrast to the need for access to a disordered but safe external environment, children feel happier in a formal learning environment that is ordered and well-organized. The lack of storage in the classrooms was a problem that had not been alleviated by the introduction of the model brief. Children and teachers expressed concern that classrooms became untidy due to having to store books and equipment in inappropriate places.

The dignity of children should be preserved at all times and should be augmented by good school design. However, there were problems caused by toilet facilities that were inadequate in number and designed in a way that left young children feeling exposed or frightened. In addition the lack of small group rooms led to children feeling on display, open to view, making their additional needs public knowledge. Teachers felt that the number of small group rooms afforded by the model brief was inadequate.

Ergonomic factors such as thermal comfort and visual acuity/good sightlines are not included in the model brief document, yet caused problems in some cases. Thermal

discomfort caused by lack of local temperature control and under-floor heating was a consistent problem in all schools, reported by children and adults.

The results indicate that valuable information can be gained from the use of the post-occupancy evaluation toolkit. Through the implementation of the toolkit in five new primary schools in Coventry the third objective of the research: ***‘to develop and test the validity of the method through the evaluation of newly built primary schools’*** was met.

Furthermore, the post-occupancy evaluation toolkit indicated the potential for the discipline of educational ergonomics to utilise methods traditionally associated with other academic disciplines, specifically human geography. The development and testing of the method indicated that the participatory, holistic approach used in many pieces of geographical research, directly involving participants and accounting for a multiplicity of voices, can be used within the discipline of educational ergonomics. In addition the results from the evaluation can provide meaningful information for school designers.

In the following chapter the efficacy of the toolkit is further demonstrated by the extent to which the results derived from its use could be turned into design guidelines and recommendations, meeting the final objective of the research. Moreover the extent to which the voices of all users may be included in evaluation is examined in the light of the findings.

Chapter Six: A Critical Appraisal of the Post-Occupancy Evaluation Toolkit

6.1 Introduction

In order to evaluate the efficacy of the post-occupancy toolkit, it was necessary to demonstrate that the data gained could be used to inform design guidelines for future primary schools. This chapter will present guidelines which have been developed from applying the toolkit in five newly built primary schools. In doing so it will meet the fourth objective of the research, ***to demonstrate that the method can produce design guidelines and useful input into future design***. This chapter will also address the research question ***‘How can all user groups be involved in the evaluation of newly built primary schools?’*** by assessing the toolkit’s success in capturing the views of various stakeholder groups.

The first section will present the effectiveness of the toolkit in gauging user requirements. This will be assessed by discussing the inputs provided by each group of stakeholders, and their contribution to the resulting guidelines. A reflection upon the nature of the Coventry Model Brief will be included and a call for an approach to school design that accommodates a more context specific approach than the one currently adopted by Coventry City Council. Finally lessons learned from the use of the post-occupancy evaluation, including issues that arose from the design and implementation of the toolkit will be presented, including an action plan for its operation in the future.

The following section will set out the level of success in gaining requirements from each of the user groups: head teachers, teachers, children, administrative staff, cleaning staff, kitchen staff and parents.

6.2 Head teachers and management staff

Every member of the management team in all schools completed the questionnaire. In this case management team refers to the head teacher, deputy heads and senior teachers. The 100% return rate not only contributed to the validity of the results, it also indicates that this method, i.e. a questionnaire, was appropriate in gathering the views of management staff. The survey gained constructive insights from the head teachers and management staff that contributed to recommendations on how the design of the school can aid its overall functioning at a management level. For example, concerning behaviour and ethos, as well as practical organizational issues, such as whether the school running costs are financially acceptable. They also provided information on the design process and aesthetics.

The perspective provided by management staff frequently concurred with that of teachers, in fact many management staff also teach in the schools, at least for part of the working week. However there were some disparities; the clearest example of this was the difference in satisfaction with the number of small group rooms as cited in Chapter Five section 5.3.2. Where there is disagreement the difficulty comes when making recommendations as to whose perspective is privileged. In this case a judgement has to be made as to whose perspective is more valid.

Although management staff have an overall view of the ways in which the school is run, many teachers expressed the opinion that some senior members of the management team were 'out of touch' with the fundamental day-to-day problems encountered. For example several teachers at Grafton School, in written comments, stated that the head teacher did not understand the problems caused by the curved design of the shared area. One teacher said: 'He has blinkers on. This [the school] was his baby and he does not like any criticism of it.' In ergonomics terms, the

teachers and children are the primary end users of the small group rooms. Although ergonomics does not provide specific ways to reconcile differences once they are noticed, it does allow for conversations to be had and compromises to be made.

The post-occupancy evaluation toolkit was designed to take into consideration the views of all user groups. Where conflicts are identified, these need to be recognised and addressed. Evidently some groups have more expertise in some areas. This is why questions were tailored to each user group. In this case teachers are the members of staff responsible for the delivery of small group activities. The views of both primary user groups (the teachers and the children) about small group spaces concur. The children did not like working in shared areas when attending groups for additional help. This gives additional credence to the teachers' views on this particular aspect of the school design.

Coventry City Council in its model brief asks that head teachers be involved in the design process for new schools. Although some schools, notably Croft Park, did actively involve other members of teaching staff in the planning stage, it could be argued that by involving other team members conflicts, such as the issue concerning numbers of small group rooms could be resolved at an early stage, through the development of mutual understanding of the needs of all groups.

6.3 Teachers

The very high return rate from teachers (92%) indicates that the questionnaire method was accessible for this group. Responses to both closed and open questions provided a valuable insight into all of the themes presented in the results chapter: behaviour and ethos, maintaining dignity, teaching and learning, play and social skills, safety and security, design process, aesthetics and ergonomic factors, and

made significant contributions to the recommendations set out in section 6.9. There was consensus on many issues amongst teachers at individual schools. For example, at Woodleigh School there was agreement amongst almost all of the teachers that the school design encouraged good behaviour. Clearly, the layout of the school which included suites of three classrooms with an area shared between them was considered to facilitate the effective monitoring and behaviour of children. This is in marked contrast to the entirely negative response to the same question at Grafton School.

This example illustrates the insight the method provided into the opinions of teachers, and the fact that there is greater variance in responses of teachers in different schools than in the same school.

6.4 Children

Given that historically children have been excluded from the research and evaluation it was considered of utmost importance to develop a method that would allow them to contribute meaningfully to the process. Through using this method children were able to play a valuable part in an evaluation of their primary schools and showed their ability to reflect upon several aspects of school design. The insights they provided were mainly concerned with maintaining dignity, learning, play and social skills, safety and security, aesthetics and ergonomic factors.

Children were able to complete the workbooks or worksheets. Their design, utilising friendly characters and age-appropriate language, facilitated their completion. As discussed in Chapter Five, the highest numbers of returns were gained from schools where the workbooks were completed in school as part of the working day. This approach should be adopted in the future implementation of the workbook. When

collecting the completed workbooks the teachers said that children had generally enjoyed completing them and found answering the questions straight-forward.

There was consistency across schools in the issues that most mattered to children and that elicited the strongest responses. This indicates that many children share similar concerns regardless of the school attended. For example the majority of key stage two children in all schools chose the word 'dangerous' to describe their cloakrooms. This is reinforced by the responses of the majority of teachers who felt that cloakrooms are insecure. The fact that this response was not confined to one school, or one user-group, indicates that recommendations are needed in cloakroom design to ensure that children feel safer.

6.5 Administrative staff

Administrative staff provided insights into how the school supported their role within the school. Particular features they evaluated were concerned with safety and security, aesthetics and ergonomic factors. In addition, administrative staff were able to contribute to an understanding of how their particular needs were met in the design of the school office space.

6.6 Maintenance and cleaning staff

The involvement of maintenance and cleaning staff was considered from the outset an important aspect of the evaluation. In the past, people with jobs that are considered low-status have been excluded from involvement in evaluations. This research sought to redress this through the development of a method that would involve all users.

This part of the evaluation was not particularly successful. It yielded very low return rates, and when questionnaires were returned they were often incomplete or with

internal inconsistencies. Although three of the schools returned questionnaires from the school caretakers, often providing in-depth written answers, very few other members of the cleaning staff took part. There are several possible reasons for the low number of returns.

Coventry provides cleaning services to schools through contracts put out to private tender. This means that cleaners no longer work directly for the school; instead they are employed by private companies. According to the head teacher of Holyhead School, this means that cleaners no longer have a direct link with the school. Frequently cleaning staff do not live in the immediate vicinity of the school and feel no affinity with it. The head teacher explained during an informal interview:

‘In the past cleaners mostly worked here because their own children came here. Now we don’t really know them and they don’t know us. It’s a shame because they’re not that interested now.’

Previously cleaning staff felt more a part of the school community, according to the head teacher, often chatting to members of staff and children, who they often knew. Now they are not as involved in the everyday life of the school. There is a possibility that this disengagement from the school community on the part of cleaning staff has led to a lack of interest in taking part in the evaluation.

According to the same head teacher, many of the staff employed to clean at the school were from ethnic minorities and spoke English as a second language. This too may have been a factor in the low return rates as the questionnaire was only available in English, making its completion difficult for some staff.

Finally, according to the UNISON website, cleaning staff are amongst the lowest paid workers in the UK, often receiving the minimum wage. It is a possibility that the

cleaning staff felt that the completion of the questionnaire in their own time was an imposition.

6.7 Kitchen Staff and Lunchtime Supervisors

The questionnaire designed for kitchen staff and lunchtime supervisors also had a low return rate. There are several possible reasons for this. Kitchen staff are employed by private contractors, possibly inhibiting their direct engagement with the school community.

Crucially there was a flaw in the design of the questionnaire. Despite there being some overlap in the roles of both kitchen staff and lunchtime supervisors, for example the monitoring of children in the dining hall, their roles are otherwise distinct, with kitchen staff responsible for the preparation and serving of food whilst lunchtime supervisors have responsibility for monitoring the behaviour and safety of children in the dining hall and when children are playing and socialising in the playground. However the questionnaire asked the same set of questions to both groups, making it difficult for participants to answer all questions. This led to a high rate of incomplete questionnaires and 'not applicable' answers. A review of the design of the questionnaire is necessary to afford a more appropriate contribution to an evaluation.

Both these groups play an important role in the school. Lunchtime supervisors have an important role to play in ensuring the security and happiness of children at lunchtime, often forming relationships with young people on a less formal basis than those with other adults such as teachers. This provides them with insights that may prove invaluable when assessing the ways in which the school contributes to or

inhibits the positive experience of children. A revised version of the questionnaire which takes better account of their views therefore is indicated.

6.8 Parents

Overall less than 25% of parents responded, but the response rate varied greatly according to school. The lowest response rates were from Grafton and Woodleigh Schools, which were in areas of extreme socio-economic deprivation. The highest response rates were from Croft Park and Holyhead.

Head teachers from Grafton and Woodleigh indicated in informal discussions that the low level of returns is a feature of life at these schools. Parents tend not to send back reply slips, and a great deal of time is spent chasing up letters sent to home, either by administration staff making phone calls to parents or by teachers meeting parents at the school gate. Several possible reasons for this were indicated through interviews with head teachers from Woodleigh and Grafton.

The schools are situated in areas of social deprivation. Often the education system is seen by parents as having let them down. According to the head teachers interviewed, parents frequently have low levels of literacy making the reading and answering of letters extremely difficult. Also schools are sometimes viewed as an unwanted infringement on the lives of parents and their children, representing authority which is often resented; therefore they are disengaged from school life. By sending the questionnaires home with children there is a possibility that they were seen as another imposition by the school by some parents. Furthermore if parents do feel disengaged and excluded from the school system, then they may feel that a set of questions about the school building is of no relevance or importance to them.

Although the questionnaire enquired about aspects of the school that were pertinent to parents, the presentation of the questionnaire warrants revision. This will be discussed in the action plan.

However, even at the school with low return rates, when parents did reply they often provided valuable insights into their needs and those of children. For example, the results from open questions on parental surveys revealed that the dropping off and collection of children at the school is an important part of the school day, where parents, particularly mothers, use the opportunity to meet and converse. Schools did not provide sufficient accommodation for what was considered a key function. One mother at Woodleigh School commented:

‘When I take or pick the kids up it’s the only time I get to speak to another adult all day. But when it’s raining we can’t chat. I think the school should have some sort of shelter for the parents so we can stand and natter.’ (Questionnaire ref. MH P10)

In order to provide a key community function, particularly for women who might otherwise be isolated from their peers, the inclusion of a shelter or community room within the school design would be beneficial for parents.

Parental responses also provided insight into some key themes, namely the ethos of the school, including their children’s attitudes towards attending schools, as well as aesthetics and the design process.

6.9 A Discussion on the Coventry Model Brief: The Need for Geographical Specificity

As the previous section demonstrates, all stakeholders can make a contribution to the evaluation of newly built primary schools. The contribution of specific stakeholders from individual schools also revealed that despite Coventry adopting a

Model Brief that provides guidelines for the build of all primary schools, the success or failure of certain features depended not so much on the actual design as on the context in which it exists.

The results provided in Chapter Five give an evaluation of key features of primary schools designed according to the Coventry's Model Brief. The Model Brief is a comprehensive document which seeks to optimise the school environment through providing detailed guidance on the minutiae of every design detail. It provides detailed lists of specifications for each room as well as a timeline for the design process that will guide the design and build stages.

Every aspect of the school building is considered in terms of materials needed, space required in square metres, and essential equipment. Each room has a data sheet where specifications are set out, from the type of glazing, to the number of coats of paint on the walls.

There is a desire for consistency, or uniformity, conveyed throughout the document. By providing a set of standardized principles it may be supposed that an evaluation would yield a set of results that would provide a similar picture across all schools. However as the results discussed in Chapter Five revealed there were many areas where responses varied greatly. The prescriptive nature of the guidelines may prohibit the development of a design that caters for a different, contingent approach to educational provision.

The model brief does not account for a sense of place. There is little scope for difference. For example the requirement for glazed partition doors is a universal requirement for all primary schools in Coventry according to the model brief. However, as demonstrated earlier, some schools regarded this as superfluous to requirements. Comments from some teachers revealed they regarded the inclusion

of glass panelled doors as a form of surveillance and took what might be perceived as subversive action, resisting the enforcement of what they perceived as a technology designed to make them more visible. They blocked off the doors and made the classrooms more 'their own space'.

A set of standard sized double doors that meet the required building regulations, including acoustic regulations would cost between £5000 and £6000. At Holyhead School there were twelve sets of these doors, with a cost of £60,000 - £72,000. This proved to be a waste of resources which could have been avoided had the city authority taken a more localised approach to school design. Focussing on the needs of the individual school, rather than developing an overarching design principle, would lead to a more effective use of capital.

The Coventry Model Brief takes no account of the socio-economic context of each individual school. As discussed in Chapter Five the behavioural problems associated with schools in areas of deprivation were not accounted for, most notably in the design of Grafton School. It is recognised that schools in areas of deprivation are more likely to experience behavioural problems with students, which can impact their own learning and that of others. The Department of Children Schools and Families (2009b) found a clear link between deprivation and behavioural problems. Using free school meal allocation as an indicator of socio-economic deprivation the DCSF states:

'FSM [free school meal] pupils are more likely to be excluded from school, either permanently or for a fixed period. They are seven times as likely to be permanently excluded in primary school, and three and a half times as likely to be permanently excluded in secondary school. For fixed period exclusions, FSM pupils are three to four times as likely to be excluded.' (DCSF 2009b:56)

Deprivation, according to the DCSF, is associated with poorer academic performance, on average, at every key stage. However, the model brief, by applying a universal set of guidelines does not allow the individual circumstances of the school, including the level of deprivation, to be accounted for.

Other differences include pupil intake characteristics, for example ethnicity, fluidity of the population, proportion of pupils from refugee families, children with special needs. School and area characteristics, including urban/rural location, housing market, local labour market structure and history will also influence the needs of the individual school.

Despite this the model brief reflects a 'context neutral' attitude to education and educational provision found in a great deal of educational discourse. For example Chris Woodhead, former head of OFSTED wrote in a letter to The Times Educational Supplement March 1996: 'It is essential the OFSTED does nothing to encourage the use of pupils' backgrounds as an excuse for poor performance.' However to ignore context in any aspect of educational policy heightens inequality rather than reduces it. As Thrupp and Lupton (2006) indicate:

'Whenever discussion of context raises social complexity and inequality [policy] assumptions are revealed as simplistic. Everyone acknowledges that effective management and teaching in one context is not the same as ...another. By failing to highlight the differences and inequalities between them, generic discussions create accounts which are too 'neutral' and politically naïve and which fail to allow for contextualised policy responses that might better meet the needs of schools.'

(Thrupp and Lupton 2006:312)

Although Thrupp and Lupton are referring to national policy, this thesis argues the same applies to the local policy adopted by Coventry. It too endeavours to have a 'one size fits all' approach to educational provision, seemingly to ensure equality of provision. As Thrupp and Lupton suggest, however, this is an overly simplistic view. Instead strategies should be adopted that would distribute resources to allow for different school designs appropriate to each context, including the physical school building, which should support an appropriate approach to school management and pedagogy.

For example Lupton (2004) found that pupils from disadvantaged backgrounds worked better in small groups, in less formal settings. This supported previous research by the author (Newman, Woodcock *et al.* 2007b). The results presented in Chapter Five indicate teachers' concern that there were too few small group rooms in the new schools built according to the model brief to accommodate small groups or less formal settings, another example of the model brief not allowing for context specificity.

In summary, similitude does not amount to equality. In fact the one size fits all approach may contribute to inequality of provision. A context specific approach to design should be incorporated into any design principles adopted by Coventry City Council.

6.10 Recommendations for School Design

This section will provide a summary of the recommendations for new school design based on the results set out in Chapter Five. Recommendations will be presented relating to the themes that arose throughout the research, with reference to the

relevant design principles set out in the Coventry Model Brief. In doing so it will provide an evaluation of the model brief and demonstrate the effectiveness of the toolkit in providing feedback that will be useful to designers and local authorities.

- **Behaviour and Ethos**

All schools involved in the evaluation, with the exception of Grafton, expressed the view that behaviour and school ethos was positively enhanced by the new school buildings. The case of Grafton however indicates the need for designers to take into account the specific needs of the school and its locality. School design should seek to lessen possibilities for crime, vandalism or poor pupil behaviour, particularly in areas where there is a higher risk.

- **Maintaining Dignity – small group rooms and personal care**

The maintenance of the dignity of children should be seen as an important element of school design. It is recommended that a greater number of small group rooms than that proposed by the Coventry Model Brief. These small group rooms should be comfortable, spacious and welcoming, ensuring that children who are receiving additional support from teaching assistants maintain a sense of being valued. It is also recommended that these rooms have a high degree of privacy to avoid a sense of 'being on display' on the part of children.

Toileting facilities are a design feature which may enhance the dignity of children. The results from the evaluation lead to the recommendation that more toilet facilities than suggested in the Coventry Model Brief are necessary to ensure that time is not lost between lessons and that children are not forced to wait for long periods of time. This was particularly the case for key stage one children whose bodily control may not be as well developed as older children. Toilet facilities need to be designed with the needs of children in mind, ensuring privacy and safety, with doors that may be

safely locked, and compartments that may not be overlooked by other children. Toilets should be well-lit to avoid the situation where children are afraid to use the facilities.

- **Teaching and Learning**

Results from the evaluation reveal that teachers and children were generally satisfied with the size of classrooms. Therefore it is recommended that the existing guidelines of 2.1m² allotted to each pupil in the classroom is sufficient and does not need to be increased.

Sliding doors should only be included in schools which have an intake of more than one class per year group. It is also recommended that the inclusion of sliding doors should be an optional feature in schools built to the Coventry Model Brief, rather than a central design principle. The specific needs of each school should be accounted for and a judgement made in individual cases. The decision as to whether sliding doors will be included in a new school build should follow discussions with teaching and management staff and, where necessary, additional training for staff to ensure they are used to benefit teaching and learning.

Shared areas should be included in school design. However their design should facilitate supervision, with good sightlines a central consideration. Circular designs should be avoided.

Storage facilities were universally considered inadequate. It is recommended that storage space should be increased and should not be centralised, although a central storage space for some shared equipment may be considered desirable.

- **Play and social skills**

The design of the outside space, including playgrounds and the outdoor classroom, should be a principal part of school design. A budget should be ring-fenced for the development of the outside space, which will not be used for the school building.

The outdoor space should include an area for the playing of football and similar ball games, however 'safe' or 'quiet' spaces should be included to ensure that children who do not wish to engage in these games are not disturbed or 'pushed out' of the playground. It is also recommended that areas are included which are sheltered from rain and strong sunshine.

A further recommendation is that a sheltered area should also be made available to parents at times when they are picking up or dropping off children. This is of particular importance in areas of high unemployment where to combat social isolation should be considered a priority.

The inclusion of large play equipment is essential in order to promote gross motor skills and social skills associated with playing, sharing and turn taking. Large play equipment, such as climbing frames, 'trim trails', climbing walls, etc should be included in the design of the playground and should not be seen as an optional extra. Equipment should encourage inclusive play, ensuring that children with impairments are provided with apparatus that they can use alongside physically able children.

Outside play-spaces should be given particular priority in schools of high socio-economic deprivation where children have little or no access to outside space in their home lives.

- **Safety and security**

Design should prioritise clear sightlines to ensure good supervision. Cloakrooms were seen as particularly unsafe areas by both children and adults. To alleviate this, cloakrooms should be spacious and well lit, with pegs that are easily reached by children. Cloakrooms should be positioned where they may be easily supervised by adults to avoid incidents of bullying and theft.

Access to the school from outside should be through one door which is controlled by administration staff. A foyer which is welcoming to visitors, but secured from the rest of the school is recommended.

Fences around the school playground should be secure and well maintained. To further the security of the school, low or easily accessible roofs should be avoided to lessen the possibility of theft or vandalism.

- **Design process**

At the time of the research, the Coventry Model Brief states that the design team should include the head teacher, however no other member of staff, the community or child has to be consulted with regard to the design of new schools. It is recommended that in future the design team should include representatives from teaching staff, ancillary staff and children. Consultation should also be conducted with members of the community affected by the school build. The possibility of an approach to school design which would involve all user groups was discussed in section 2.8 of Chapter Two and is the one recommended from the research. It is envisaged that this would alleviate many of the problems associated with feelings of exclusion and marginalisation, for example Grafton School, whilst promoting a positive sense of inclusion, as seen at Croft Park School (see section 5.3.6 for further discussion).

Crucially an inclusive approach to school design would take into account the particular needs of relevant sections the community in relation its geographical specificity. The school staff, children and parents will be able to provide an insight into the specific issues pertinent to the community, such as ethnicity, proximity to local amenities, traffic, flooding, individual landscape features, the history of the community and its specific needs. The less tangible aspects of community which may be described as 'a sense of place' would also be revealed by a more inclusive approach to the design process, which could be accounted for in the final build.

- **Aesthetics**

The schools built according to Coventry's Model Brief were consistently considered aesthetically pleasing. No additional recommendations are therefore considered necessary. However, future schools should take into account their surroundings and should seek to enhance the neighbourhood. The local community should be consulted on visual aspects of the school design in order to alleviate tensions and to promote a sense of communal pride in new school buildings.

- **Ergonomic factors**

The importance of ergonomic factors in school design was discussed in section 2.2 of Chapter Two. The evaluation revealed that several ergonomic factors were inadequately accommodated in the new school buildings, leading to further recommendations:

- under-floor heating should not be used in new primary school builds, or if it is used, an area of carpeted floor should be free from heating in order to avoid young children over-heating whilst sitting on the carpet.
- Thermostatic controls should be locally based, for example in classrooms, to ensure thermal comfort.

- The guidelines for the acoustic design of school outlined in Building Bulletin 93 should continue to be adhered to. No further recommendations are necessary as a result of the research. The amount of natural light should be controlled locally, i.e. in the classroom. Blinds should be fitted as part of the school construction, not as an additional extra following completion.
- Further care should be taken when situating white boards to ensure glare is minimised.

6.11 Conclusions: Lessons Learned and Action Plan for Future Implementation

The post-occupancy evaluation toolkit was successful in accessing the voices of many of the stakeholders in primary schools. It was most successful in gaining the opinions of head teachers and management staff, teachers, children and administration staff. It was less successful in reaching cleaning staff, kitchen staff, lunchtime supervisors and parents.

The written presentation of the POE was appropriate for gaining the opinions of head teachers, teachers and administration staff. These user groups regularly read and interpret questions which they confidently respond to. The high return and completion rates indicate that this type of format is not problematic for these groups. A wide ranging insight was gained into the appropriateness of the school building.

However the presentation of the questionnaire for other adult user groups proved problematic and alternative methods should be considered for the future implementation of school evaluations. One alternative would be to conduct structured face-to-face interviews, using the questionnaires as the interview schedule, with harder to reach groups. In this case the interviewer would be on hand to provide clarification on the meanings of questions and possible responses. Possible problems in using this approach would concern the amount of time this

would take. It would be difficult to conduct structured interviews with all ancillary school staff, given the number of staff involved at each school. The issues associated with some staff having English as a second language may be solved through translation or interviews conducted by speakers of the appropriate language. Due to the number of parents that would potentially be involved in evaluating schools, it would be unfeasible to conduct face-to-face structured interviews. There are two viable alternatives to the approach taken in the research. Rather than simply distributing the questionnaires via children, similar to other letters home, the questionnaires could be presented to parents in a situation where they meet the researcher and any questions about its use and application may be clarified, for example during a school assembly, at 'home time' at the school gate, at parents evening or a specific event to which parents would be invited. Having direct contact with the researcher may increase the rates of return.

The use of the toolkit provided an evaluation of schools built to the Model Brief used by Coventry City Council. It also enabled the production of a set of recommendations for future primary school design. However several steps should be taken to ensure its success in future evaluations:

- All staff should be given time within their working day to complete the questionnaires to ensure a high rate of return.
- The questionnaire for parents and ancillary staff should be translated into the first languages of the target groups to ensure higher return rates and to foster a sense of inclusion.
- Questionnaires for parents should be given out at school events where parents are invited to attend. This would contribute to an increase in the return

rate. Unfortunately there will be a minority of parents who will not attend these events and prove very difficult to access.

- In schools where the literacy rates of parents are poor, face-to-face interviews structured around the questionnaire will be conducted over the course of several days at dropping off and picking up times, school assemblies and parents evenings in order to access parents who might otherwise be reluctant to complete the questionnaires.
- Teachers will be encouraged to give the workbook out to key stage two children as part of their school work, rather than homework, to ensure a high rate of return. It will be emphasised that children should be encouraged to give frank answers with no reprisals for negative responses. In order to ensure this, in future the workbooks will not ask for the names of children and returns will be identified only by school and classroom.
- Revisions will be made to the questionnaire for kitchen staff/lunchtime supervisors. In future these will be separated into two questionnaires, with the questions focussed on each specific role.

Following on from the evaluation of the toolkit, the final chapter will set out the conclusions from the research. It will also provide a reflection on the methods used, the contributions to knowledge and the potential for future research.

Chapter Seven: Conclusions and Reflections on the Research

7.1 Introduction: Addressing the research question and restatement of aims and objectives

This chapter will outline the conclusions from the research, indicating how the research question was answered and objectives met. The contributions to knowledge made by the research will be presented and discussed. Reflections on the research and future work will also be presented. This study set out to answer the research question:

‘How can all user groups be involved in the evaluation of newly built primary schools?’

In order to answer the question a post-occupancy evaluation toolkit was developed that set out to account for the views of all users. In order to ensure that the toolkit was appropriate to answer the research question, four objectives were set and met through the research. These were:

1. *To assess existing methods of evaluation*
2. *To establish key areas and issues the method should evaluate*
3. *To develop and test the validity of the method through the evaluation of newly built primary schools*
4. *To demonstrate that the method can produce design guidelines and useful material for re-design*

Objective One: To assess existing methods of evaluation

A review of post-occupancy evaluation methods was described in section 2.8 of Chapter Two. The literature review concluded that there was a gap in the methods available because although post-occupancy evaluation tools were available prior

these were flawed when applied to primary schools. The critique of many existing methods, including the Design Quality Indicator, the Building Use Study and the Centre for Effective Learning Environments online questionnaire (see section 2.8), concluded that they did not seek to gain insights from all user groups. Others were too generic, or intended for use in general office buildings, deeming them inappropriate for use in schools. The high level of vocabulary and language used in many evaluation methods excluded children from their use, whilst others focussed on purely physical aspects of the building, not seeking to address the less tangible or emotional qualities.

The literature review also concluded that the field of educational ergonomics has hitherto focussed on the physical aspects of the educational environment and has not fully taken into account the emotional experiences of school for end users. Frequently the various aspects of the physical environment, for example lighting and heating had been examined in isolation, foregoing a more holistic approach which could account for the experience of school as a whole. It was also concluded that educational ergonomics had previously not used methods which may be beneficial to the discipline when evaluating the experiences of end user groups. These methods have traditionally been associated with other academic disciplines, for example participatory action research used by geographers, particularly those conducting research with children.

The research method that was developed in order to address the research question aimed to fill the gap in the methods available to evaluate school buildings. It did so by ensuring it accounted for all users, was specific to the primary school setting and addressed issues pertinent to each user group.

Objective Two: to establish key areas and issues the method should evaluate

The second objective was achieved through the literature review and the set of case studies set out in Chapter Four. The literature review established the ergonomic factors which are vital to ensure a physically healthy and comfortable environment for children and adults in primary schools, for example thermal comfort, visual acuity, and classroom density. In addition it highlighted the absence of the emotional aspects of school experience in previous ergonomic research.

Following the literature review, the first stage of the empirical research set out in Chapter Four established issues and areas for the method to evaluate. The case studies involved observations in all classes, interviews with members of teaching staff and children. The results identified several themes that needed to be addressed through inclusion in a post-occupancy evaluation. The themes were: behaviour and ethos, dignity, teaching and learning, play and social skills, safety and security. Throughout the development of the evaluation method, these themes were addressed, for example, through asking teachers and children about the ways in which the design of the classroom promoted or inhibited teaching and learning.

This stage of the research also raised questions as to the range of people included in the research. For example although all children were involved in observations, only children who were part of the school council were involved in the interview stage of the case studies. As discussed in Chapter Three, these children were frequently chosen by 'gatekeepers', specifically head teachers, to represent the school in various contexts. These children were frequently academic high achievers and were considered by staff to be well behaved and 'good ambassadors'. It was decided that in order to be fully inclusive, the evaluation toolkit should seek opinions from children whose voices were frequently marginalised from decision making processes, for example children of low academic ability or whose behaviour is perceived as

disruptive. Also the evaluation method should include other stakeholders, such as administrative staff, ancillary staff and parents, who are frequently excluded from school evaluation. Once the areas for evaluation had been established, the evaluation method was developed.

Objective Three: to develop and test the validity of the method through the evaluation of newly built primary schools

The method was used to conduct an evaluation of five newly built primary schools. The results were set out in Chapter Five. This was the first post-occupancy evaluation to be conducted in Coventry primary schools.

The results and guidelines from the research were presented to Coventry City Council School Planning Department, at the 'Realising Participatory Design with Children in Schools' conference (Newman et al 2009) Coventry City Council has subsequently adopted the toolkit as the method they will use to evaluate future school builds. The fact that it will be used as a key performance indicator in the post-build evaluation of primary schools demonstrates that Coventry considered the method and the results produced to be to be valid and useful. Coventry has also approached the author to develop the toolkit to enable it to be used in the context of special needs schools.

Chapter Six presented a critical reflection on the method which concluded that overall this was successful in involving end user groups. The method was particularly successful in gaining the evaluations of teachers, management staff (head teachers, deputy heads and senior teachers), administrative staff and children. Further development is required to provide more useful information from other ancillary staff and parents. Plans for the future enhancement of the method were outlined in the action plan presented in Chapter Six.

Objective Four: to demonstrate that the method can produce design guidelines and useful material for re-design.

Chapter Six section 6.10 presented a set of guidelines produced from the results of the research. The themes that the guidelines related to were:

Behaviour and Ethos

Maintaining Dignity – Small Group Rooms and Personal Care

Teaching and Learning

Play and Social Skills

Safety and Security

Design Process

Aesthetics

Ergonomic Factors

Evidence based recommendations were made and presented on each of the themes which can be adopted in future school design. The recommendations which resulted from the evaluation demonstrate that the method can produce guidelines which are of use in future design.

7.2 Contributions to Knowledge

The research made contributions to knowledge in three ways: methodological, empirical and theoretical.

Methodological

In answering the research question ***‘How can all user groups be involved in the evaluation of newly built primary schools?’*** a unique method was developed which is a valuable addition to the range of techniques available to designers and

school authorities. As the critique of existing methods in Chapter Two indicated, other methods did not fully or appropriately account for the views of primary end-users. The development of the method was based upon a review of the methods used in educational ergonomics in human geography and existing methods of post-occupancy evaluation. This was coupled with the issues and areas of concern that arose from initial research in three case study schools.

Coventry City Council have adopted the method as the means to evaluate new schools from the perspective of end-users and it will be used as a key performance indicator within the post-occupancy design stage. This indicates that the research has produced a workable method, which yields results that are regarded as useful for designers and for future school design.

Empirical

Results and guidelines as presented in Chapters Five and Six provided the first evaluation of newly built primary schools in Coventry. The results contributed to an understanding of the appropriateness of new school buildings to end user groups. Furthermore, the results led to evidence based guidelines that can be used by designers in future primary school builds. In addition to guidelines for school design, the empirical evidence points to a need for designers to account for the specific geographical location of the school, including the needs of the community, the physical location and the needs of children within the catchment area.

Theoretical

The review of the literature from both educational ergonomics and human geography explored the potential for educational ergonomic research to adopt approaches

previously used by geographers, particularly those conducting research with children. By adopting methods that seek to evaluate the perspective of end-users, particularly children, regarding the whole experience of school, rather than a focus on individual ergonomic characteristics, a contribution has been made to methods that can be used within educational ergonomics to further an holistic understanding. The recognition that educational ergonomics would benefit from accounting for geographical specificity when conducting evaluations of primary school buildings has led to the call for a theoretical repositioning which may be called a 'spatial turn'. This would evaluate the individual ergonomic features of a school whilst adopting an approach that would take into account the specific needs within a given location.

7.3 Reflections and Future Work

Any research is part of a continuum, building on what has preceded and indicating potential for future development. The method proved effective in evaluating newly built primary schools, but there is room for further improvement as set out in the action plan in Chapter Six.

In addition to its use in mainstream primary schools, the method is currently being adapted for use in schools for children with special educational needs (SEN). The sections of the original toolkit intended for use with key stage one and two children in mainstream schools used cartoon type images of imaginary characters intended to represent children in everyday activities. Children with special educational needs often cannot make the conceptual leap between stylised representations of people and their own real experiences. In order to tailor the toolkit for children with additional

needs, photographic images of real children in real classrooms will replace the current images.

The reading age of children with SEN is often very low, as is comprehension of written texts. Therefore the original workbook will not be used in the context of special educational needs schools. Instead, the story book will be used for all ages.

At the time of the research Coventry City Council was in the process of designing two 'broad spectrum' special needs schools. The schools are intended to accommodate the needs of children with special needs. From those with mild to moderate needs to those with severe, multiple and profound needs. Designing an effective tool which will account for the voices of all children is challenging. The toolkit must be appropriate for the full range of ability of children, some of whom will be reasonably competent in reading, whilst others have little or no communication. Therefore the adapted toolkit will consist of a range of individual worksheets, simple stories utilising signs and symbols from Makaton sign language (for example see Figure 59), which is the system currently used in Coventry special schools and is familiar to children and staff.

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Figure 59 www.widgit.com/products/makaton/makaton01.jpg

Some children in mainstream schools have poor reading skills and would benefit from the inclusion of Makaton, therefore adaptations will be made to the existing toolkit to include Makaton signs to further improve communication.

Many children who attend special schools have severe, multiple and profound needs. New special schools therefore must accommodate these needs through provision for physiotherapy, occupational therapy and medical interventions. The toolkit for special schools therefore will also need to evaluate the ways in which these needs are met in the school building. Therefore a questionnaire for nursing staff and visiting health professionals will be developed. Additional questions will be included for teaching staff and the story book for children which will contribute to the evaluation of the extent to which children's medical needs are met.

Further amendments to the method and its delivery were explained and discussed in the action plan set out in Chapter Six section 6.11.

7.4 Concluding Thoughts

The research question: ***'How can all user groups be involved in the evaluation of newly built primary schools?'*** has been answered through the development of a unique post-occupancy evaluation toolkit. Through meeting the objectives of the research, it has been established that previously available toolkits do not adequately evaluate primary school builds from the perspective of all stakeholders. The review of literature from ergonomics and methods used by human geographers coupled with an analysis of the issues and concerns of end-users of primary schools resulted in the development of a post-occupancy evaluation toolkit. The toolkit has proved to be capable of producing valid results which can be used for guidelines in future builds.

The research was conducted at a time when the UK government was implementing major school rebuilding programmes: Building Schools for the Future and the Primary Capital Programme. The development of a workable method that accounted for the viewpoints of end-users, including children, provided a means of evaluation,

which examined themes and issues that were of concern to end-users. Its inclusive approach ensured that all user groups were involved in the evaluation, and their needs and emotional response to new school buildings were assessed. Future development will further its inclusive approach, ensuring that children with communication or learning problems can contribute to future evaluations.

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Appendix B

Memorandum		Coventry University	
		Faculty of Health & Life Sciences	
To: Andree Woodcock	From: Rhoda Morgan		
Cc:	Extension email: 5905 r.morgan@coventry.ac.uk	Delivery Point: RCG-17	
	Our Reference: S1002		
	Date: 23 rd March 2017		

Dear Andree,

Coventry University Ethics Committee

Thank you for submitting your application to Coventry University Ethics Committee.

I am pleased to inform you that your application has been approved with specific conditions. Please find a signed copy of Form 1 and a Peer review form for your reference.

Best wishes for your research project.

Regards,



Rhoda Morgan
Secretary
Coventry University Ethics Committee
Tel: 024 7679 5005



Dr Andrea Woodcock
The Design Institute
Bugatti Building
Coventry University
Priory Street
COVENTRY
CV1 5FB

Our reference SRS/DH
29 January 2007

Education and Libraries Directorate
School Improvement Service

New Council Offices
Earl Street
Coventry
CV1 5RS

Telephone 024 7663 3642
Fax 024 7663 3634
www.coventry.gov.uk

Please contact David Haley
Direct line 024 7663 3635
Fax 024 7663 3634
david.haley@coventry.gov.uk

Dear Andrea

Collaboration between Coventry University and Coventry City Council: Children Learning and Young People's Directorate

I am pleased to confirm that we support the research into the school environment for your PhD Student Michelle Newman. Permission is granted for the research to go ahead in the nominated Coventry schools, at the discretion of the Headteacher. We are particularly interested in sharing the results of Michelle's research into the effects on children of the school environment and will ask her to disseminate this to groups of advisers and teachers in due course.

It would be helpful to have a copy of Michelle's research brief when it is available.

Yours sincerely

David Haley
Strategic Director School Improvement Service



Coventry City Council

Acting Director of Education and Libraries Ruth Snow/Chris West, Head of Service Ruth Snow/Head of Services for Schools
P/CYP&PSA/Advisors/Aileen Toner/letter code unit letter.doc

Learning for life

Appendix D

To the parent/guardian of.....

Dear parent/guardian,

Your child has been asked to take part in a project looking at the design and building of the school environment.

This project will take place during school time. It will involve the children being interviewed, taking photographs, making video and sound recordings, drawing and writing. The whole experience should be enjoyable and educational for all the children involved.

The aim of the research is to improve the design of future schools. Permission has been given by the head teacher and the education authority to do the research in the school.

I would be very grateful if you could please sign the consent form below and return it to school, permitting your child to take part in the project and for them to have their photographs and videos taken. Please be assured that your children will remain anonymous and their faces will be blurred out of any photographs.

If you have any questions about the project please contact me by e-mail at

apy175@coventry.ac.uk

Yours faithfully

Michelle Newman (Research Assistant, Coventry University)

.....
I give / do not give permission for my child.....

School and Class.....

To take part in the project on school environments including having their photograph and video taken.

Signed.....parent/guardian Date.....

Witnessed by

Signed..... Date.....

Appendix E

Michelle Newman

Publications

Peer reviewed papers

Newman, M., Woodcock, A. and Dunham, P. (2009) Results of a Post Occupancy Evaluation of Coventry Model Brief Primary Schools. *Contemporary Ergonomics: Proceedings of the Annual Conference of the Ergonomics Society* London, Taylor and Francis

Newman, M. and Thomas, P. (2008) Student Participation in Design: One School's Approach to Student Engagement in BSF *CoDesign* Vol 4 No 4

Newman, M., Woodcock, A., and Dunham, P. (2007) 'We Change Lives in Here': Environments for 'Nurturing' in UK Primary Schools. *Built Environment*, Vol 33 No 4, pp 430 - 440

Newman, M. Woodcock, A and Dunham, P. (2006) 'Playtime in the Borderlands': Children's Representations of School, Gender and Bullying through Photographs and Interviews. *Children's Geographies*, Vol 4 No 3, 289-302, December 2006

(This paper is due for publication in an Open University textbook on conducting research with children.)

Conference papers

Newman, M. (2009) 'Participatory Design with Children in Schools' Design Pedagogy Special Interest Group 2nd Symposium, October 2009

Newman, M., Woodcock, A. and Dunham, P. (2009) 'Results of a Multi Stakeholder Post – Occupancy Evaluation of Primary Schools' Ergonomics Association Annual Conference, Royal College of Physicians, London, April 2009

Woodcock, A., Newman, M., Kinross, M., Kraftl, P., Horton, J., Adey, P., Denbesten, O. (2009) 'Pupil Involvement in Classroom (re)design: Participatory Ergonomics in Policy and Practice' Ergonomics Association Annual Conference, Royal College of Physicians, London, April 2009

Den Besten, O., Adey, P., Kraftl, P. and Newman, M. (2009) 'Design As Discourse: An Ethnographic Perspective on the Participatory School-Building Process' To be presented at the 3rd International Conference on Design Principles and Practices, Berlin, Feb 2009

Newman, M., Woodcock, A. and Dunham, P. (2008) "A Post Occupancy Evaluation of Five Primary Schools Built to Coventry's Model Brief" Ergonomics Association Annual Conference, Nottingham, April 2008

Den Besten, O., Horton, J., Adey, P., Kinross, M., Kraftl, P. Newman, M. and Woodcock, A. (2008) "The Event(s) of school (re) design" RGS/IBG Annual Conference, Royal Geographical Society, London August 2008

Newman, M., Woodcock, A., Dunham, P. (2007) "How Children Use and Perceive the Primary School Environment" Ergonomics Association Annual Conference, Loughborough, April 2007

Newman, M. Woodcock, A and Dunham, P (2006) "Building Schools for the Future – a Case Study." Presented at the Ergonomics International Congress, Maastricht, July 2006.

Newman, M. Woodcock, A. and Dunham, P. (2006) "Nurture Rooms – A Case Study in Four U.K. primary schools" Presented at the Children's Geographies Conference, Northampton, September 2006

Newman, M. Woodcock, A. and Dunham, P. (2006) "We Change Lives in Here": The Nurture Room" Presented at Access and Integration conference, Coventry December 2006

Newman, M. Woodcock, A. and Dunham, P. (2005) "A Case Study of Photography in a U.K. Primary School" Presented at Children's Geographies Conference, Brunel, June 2005

Newman, M. Woodcock, A. and Dunham, P. (2005) "I'm always in detention...but I'd rather be here" Presented at Access and Integration conference, Coventry, December 2005

Book Chapters

Woodcock, A., Kraftl, P., Horton, J., Adey, P., Kinross, M., Newman, M., den Besten, O., (2009) *Realising Participatory Design With Children and Young People: A Case Study of Design and Refurbishment In Schools* Designing for the 21st Century – Interdisciplinary Questions & Insights Volume 2.

Other publications

Horton, J., Kraftl, P., Woodcock, A., Newman, M., Kinross, M., Adey, P., den Besten, O. (2009) 'Involving pupils in school design: a guide for local authorities and architects'

Horton, J., Kraftl, P., Woodcock, A., Newman, M., Kinross, M., Adey, P., den Besten, O. (2009) 'Involving pupils in school design: a guide for schools'

(These guidelines were distributed to every local authority in England and available online at <http://www.coventry.ac.uk/researchnet/d/699>)

Appendix G

Background to the Target Schools

The five primary schools were all built post-1998. They have been given pseudonyms to maintain anonymity.

Woodleigh

Woodleigh Primary School is a one and a half form entry (45 children per year group), opened in August 2004 after the closure of two existing primary schools. The New Deal for Communities (NDC) project was involved in the financing and building of the new school. NDC is a key part of the government's strategy to tackle multiple deprivation in the most deprived areas of the UK. Woodleigh is situated in the third most deprived ward in Coventry (Coventry 2009). The aim of NDC is to provide resources to deprived areas so that problems may be tackled in an intensive and co-ordinated way, the aim being to bridge the gap between these areas and others in the UK. This involvement of both the local authority and NDC in funding the new school had implications for the final design as the needs of both funding parties had to be met in the final design.

The school is built in a triangular configuration, with the early years centre, supported by NDC along one side, the primary school on the second, and a large community/conference centre on the third (Figure 42). The building therefore accommodates three separate but connected functions. The school will also have a

separate special needs school built on part of the site in 2010. Interviews with the architects responsible for the design revealed that it was considered necessary by NDC to make the school a symbol for regeneration, to make a visual statement about the role of the school for the community. This resulted in a radical design:

‘Coventry said “yes this [the original traditional design] is all very good” and we had our first presentation with loads of people round the table from the LEA and the client agencies. Obviously there were New Deals for Communities representatives, school representatives. It was one of the biggest presentations we’ve done, but it was obviously important because it was this regenerator, flagship...They wanted a flagship and I don’t think we’d given it to them [in the originally proposed design]...so we decided to wipe the slate clean and start again. Break it down into its constituent elements, the three essential elements of it and build it up from that. We went to the next presentation and they absolutely loved it. We went back to the same people and it was exactly what they wanted’ (Sara, architect).

However, the innovative design proved to be too expensive for the original budget, which resulted in some cut backs to the design having to be made:

‘Unfortunately as with most of these projects there is an element of value engineering or cost cutting and although it was a sound concept and it did allow natural light and natural ventilation into the

core of the building the roof lights were lost, so the natural light element was compromised. So that was kind of a shame. And that was one of the lessons learned' (Sara, architect)

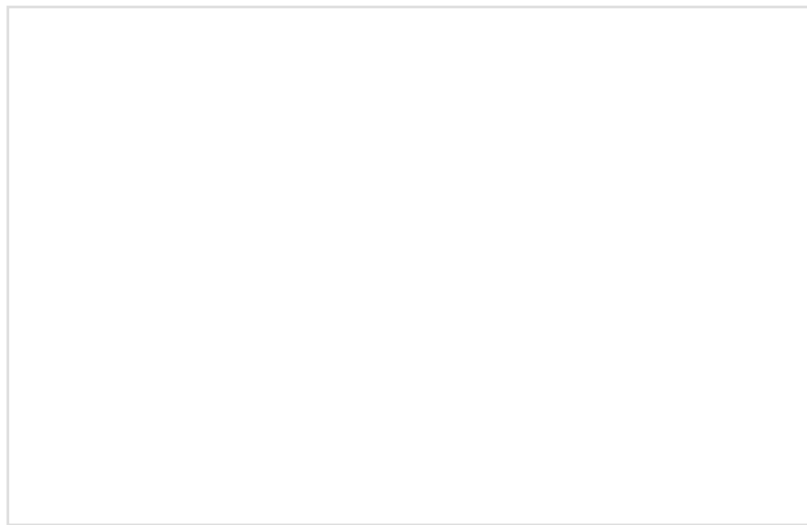


Figure 60 Woodleigh School aerial view indicating innovative triangular configuration (Google Earth image)

This resulted in some compromises to user comfort, as will be discussed in the results section.

The specific geographical location of the school, in an area of extreme deprivation that was targeted for regeneration, was a powerful influence over the design of the

school, particularly in terms of its overall shape. The school was required to serve both a functional, practical purpose in providing a building appropriate to the educational needs of the children, and to symbolise an ideal of community regeneration. The ground-breaking tripartite design made a visual statement indicating the necessity of a 'new deal' for this community, one that needed to be modern, forward looking and intolerant of mediocrity in design.

Woodleigh has a larger than average intake of pupils. Approximately three quarters of the pupils from a white British background with the remainder coming from a wide range of minority ethnic groups. Many pupils speak English as an additional language and a significant proportion of these are at an early stage of learning English. The proportion of pupils with learning difficulties and/or disabilities is above average. The school serves an area of social and economic disadvantage and this is indicated by the extremely high proportion of pupils eligible for free school meals. Woodleigh was formed in Sept 2002 and the school moved into new accommodation in September 2004. The children's centre on site provides before and after school care.

The school's most recent OFSTED inspection (October 2007) reported that Woodleigh was a good school with many outstanding features. One of the areas singled out for praise was the school's ethos which was considered caring, providing excellent pastoral care for its students. Parents regarded the staff highly, particularly the head teacher who was considered caring, placing the needs of all his pupils above other considerations. The personal development and well-being of pupils at the school were considered outstanding and their excellent behaviour was highly praised. The school is considered effective with staff maintaining high expectations, despite the low attainment of children upon entering the school.

Conversations with the head teacher revealed the extent of the social problems of the children. He said that many children begin school with very poor language skills, some not properly toilet trained and many having unstable home lives. Some children have very poor attendance, and numerous children come to school very late on a daily basis, often arriving only in time for lunch.

There was also an issue with the safety of the children arriving at school due to the nature of the busy road which provides access. This was exacerbated because many children walked without parental supervision. This was a particular issue when children arrived late when there were no other parents nearby to assure their safety.



Figure 61 Woodleigh front aspect

Holyhead

Holyhead is a large primary school near the centre of Coventry, which serves a mixed population. The new school building opened in September 2006. It is a two

form entry, with each year group having approximately 60 pupils. The school was designed with sustainability high on the agenda. This was reflected in one of the striking features of the school building; its growing roof of sedum.

During the past two decades there has been a change in the local community served by the school and the area has become one of significant social and economic deprivation, being the fourth most deprived ward in Coventry (Coventry 2009).

There has not been an OFSTED inspection of the school since it was relocated to its new site. However the most recent report, in 2006, stated that the school, whilst in its previous building, had provided a satisfactory education and value for money. It indicated that the school was recovering from a period of disruption with a high staff turnover, resulting in a lowering of standards and attainment. This was more settled with the appointment of a new senior management team providing strong leadership and stability.

An interview with the architects responsible for the design of the new build revealed a close working relationship with adult stakeholders throughout the design and build stages. They met regularly in order to develop a detailed brief, which was felt to be beneficial to all parties:

‘The elected governing member and the head teacher were at the interview where we won the job and they’ve come to every major meeting since, so there’s a huge commitment on their part and it’s very much appreciated. So they’ve been to a meeting probably every three weeks for two years and there’s work that they have to do in terms of helping us develop a brief because that tends to be very

individual school by school...We've also worked pretty closely with their head of early years, deputy head as well.' Hugh, architect

Stakeholder involvement was considered key to a successful build by all parties. This was reflected in positive responses to the new school build that will be discussed in the results section.

Windbrook

Windbrook Primary School is a grant maintained Primary School for pupils aged 3 to 11 and was the first school to be built to the city's model brief in 1998. The new build replaced the previous Victorian building. Most of the old school has since been demolished but one part is still used today as the Nursery and the Community Lounge. It is a single form entry school with 210 children on its roll, plus provision for a further 52 children attending part-time in the nursery class. According to its most recent OFSTED report, Windbrook Primary is slightly smaller than the average size school. It is situated in the third most deprived ward in Coventry (Coventry 2009). Most pupils are from a range of minority ethnic groups, including White and Black Caribbean, Indian and Pakistani. A small number of pupils come from White British backgrounds. The number of pupils who speak English as an additional language is above average. A few pupils are at the early stages of learning English. The proportion of pupils who are identified as having learning difficulties and/or disabilities is below average. Learning mentors support the specific needs of some pupils. A significant number of pupils leave and join the school during the school year rather than at normal enrolment times. Most children start school with levels of attainment that are well below those expected for their ages, particularly in their language development.

Windbrook was the first school to be built using Coventry's model brief. The present head was not appointed at the time of the build, therefore had no input into the design of the school. At the time of conducting the research the school was undergoing repairs to the roof. Interviews with the head indicated that he felt this was due to poor building quality at the time of the initial construction.



Figure 62 Windbrook front aspect

Grafton

Grafton is a community primary school with a one and a half form entry, (a potential for 45 children per year group)

It is a new school created in 2003 as a result of the amalgamation of two primary schools in an area where pupil numbers were falling. The school moved into its new building in January 2006. The majority of the pupils are from a white British ethnic background with a high proportion having learning difficulties and disabilities. The proportion of pupils eligible for free school meals is well above average. The school serves an area recognised as one of the most socially disadvantaged in Coventry. It has a very high absence rate, mainly due to a section of children who have persistent condoned absence. There is also a high rate of pupil turnover. The building of the school was controversial from the outset. One of the two schools involved in the merger had a reputation in the local community for excellence, whilst the other was regarded as a failing school, with many parents opting to remove their children to send them to schools out of the immediate area. The merger prompted protests from parents, particularly from the school considered to be excellent, including a leafleting campaign, aiming to ensure both schools remained open and separate. Despite protests the planned merger went ahead and Grafton School was formed. Subsequently many parents chose to send their children to schools outside the immediate area, causing the numbers in Grafton to be extremely low. Despite the school having a capacity for around 315 children the school has very low numbers, which continue to decline. At the time of the last OFSTED report in 2006 there were approximately 250 on the school roll. However by 2008 according to the school's profile there were 211 children, meaning the numbers had fallen by 39 children.

Recruiting and retaining staff at Grafton proved to be difficult, with many staff from the original two primary schools opting to take up appointments elsewhere. There were significant changes to the senior management staff during the first year of the school's existence

In an approach similar to that when planning Woodleigh, Coventry wanted the architecture to be innovative and make a visual statement about community renewal. Interviews with a member of the planning department demonstrated the intent to give the community a 'state of the art' facility that would provide a flagship feature with significant resources within an otherwise deprived community:

'[Grafton] is a fantastic building. Visually it is remarkable, quite special. We wanted it to make a difference to the people. Give something special to the community' (Margot, planning department).

However, the school was not received well in the community, as indicated by the pupil numbers. The disappointment on the part of Coventry to the community's reaction was expressed by Margot who said:

'It's a real shame, they've had a hard press and I think people should give it a chance.'

The school has an innovative design, with an oval central hall and corridor running around it. Coventry indicates the level of pride it has in the design of the school displaying prominently in its own offices the plans and drawings for the school. The school architects received several design awards as a result of their work on

Grafton. Despite this, Grafton was the most heavily criticised in terms of suitability for purpose, as will be discussed in the results section.



Figure 63 Grafton external view





Figure 65 PE lesson in oval hall at Grafton

Croft Park

Croft Park is a large two form entry primary school, with 440 pupils on its roll, plus provision for 78 part-time nursery places. The school was rebuilt in 2001. According to the most recent OFSTED report (Ofsted 2006b) it now has very good accommodation, which is used by a private out-of-school care provider and groups in the local community. Pupils generally enter school with standards that are below average. The number with learning difficulties varies from year to year but is below average overall. The percentage from minority ethnic groups and those whose first language is not English is above the national average. The school is in an area considered to be more affluent than the location of the other schools involved in the research. The ward in which the school is situated is the fourteenth most deprived in Coventry according to the 2007 index of deprivation, having moved down a place since 2004, implying that the area has become less deprived in recent years (Coventry 2009)

The head teacher of the school was part of the design team for the new school, meaning that his input was valued and had a significant impact on the resulting design.

The school design is considered to be an important aspect of the whole school experience, as indicated in the school prospectus that states:

‘One of the most fundamental aims of the school is to foster in the child a need for, and an ability to create, positive enjoyment, - which leads to personal fulfilment both as an individual and as a member of a team. The aesthetic and physical aspects of the school can provide many diverse experiences’



Figure 67 Croft Park entrance

Appendix H

See next page

Head teachers and senior management team

Section A

This section will ask about how the school building may affect ethos and learning in the school

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor	Slightly agree	Agree	Strongly agree	Not applicable
The design of the school encourages a positive ethos								
The school building does not deter vandalism								
The design of the school supports current educational								
The design of the school supports the delivery of the								
The design of the school inhibits effective teaching								
The design of the school supports learning								
The design of the school inhibits the delivery of a varied								

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor	Slightly agree	Agree	Strongly agree	Not applicable
The design of the school encourages good behaviour								
The needs of children with special needs are								
Opening glazed partitions between classrooms support								
Shared areas outside classrooms support teaching								
The design of the school inhibits the teaching of ICT								

Section B

These questions will ask about use of space in the school

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor	Slightly agree	Agree	Strongly agree	Not applicable
Children are able to move around the school easily.								
The hall is appropriate for assemblies								
There are enough small rooms available for small								
There is no room for a nurture group								
There is enough space for all the activities of the								
There is wasted space in the school								
Shared areas outside classrooms are an effective use								

Section C

These questions will ask about issues concerning the management of the school.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor	Slightly agree	Agree	Strongly Agree	Not applicable
The school design facilitates the efficient running of								
The school is suitable for the needs of the								
Whole school activities are inhibited by the								
The needs of the wider community are met by the								
The acoustics are generally good in the school								
The temperature in the school is easily controllable								
The building is financially efficient								
The building is environmentally friendly								
My office allows for privacy								
	Strongly disagree	Disagree	Slightly disagree	Neither agree nor	Slightly agree	Agree	Strongly agree	Not applicable
My office is too small for my needs								
My office has been designed to meet the needs of my job								
I have easy access to the rest of the school from my								

Teachers and teaching assistants

	Teacher in nursery or reception	Teacher in K.S. 1	Teacher in K.S. 2	Teaching assistant nursery/reception	Teaching assistant in K.S. 1	Teaching assistant in K.S. 2
Please tick your job description						

Section A

These questions will ask about your classroom

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor	Slightly agree	Agree	Strongly agree	Not applicable
The classroom does not have enough space								
The design of the classroom helps me feel in control								
Sliding doors between two or more classrooms								
The design of the classroom supports my teaching								
Having a shared area outside the classroom helps								
Acoustics in the classroom are poor								
	Strongly disagree	Disagree	Slightly disagree	Neither agree nor	Slightly agree	Agree	Strongly agree	Not applicable
I am able to control the temperature in my classroom								
There are not enough accessible sinks								
My classroom has enough storage								
There are not enough power points								
My classroom does not have enough natural light								
I am able to control the amount of light in the classroom								

Pupils cannot always see the whiteboard								
My classroom has adequate ventilation								
The design of my classroom inhibits whole class								
The classroom enables children to work in groups								
The ICT provision in my classroom facilitates effective								
	Strongly disagree	Disagree	Slightly disagree	Neither agree nor	Slightly agree	Agree	Strongly agree	Not applicable
My classroom makes the children feel safe								
Generally the design of the classroom								
The classroom does not meet the requirements of								
My classroom inhibits the effective delivery								
My classroom allows for flexibility in								
The design of the classroom makes demonstrating								
Pupils are able to undertake teacher directed activities								
The classroom facilitates a differentiated								
Pupils have space and opportunity to work on their own								
Pupils have space and opportunity to work co-operatively								
Generally the classroom facilitates learning								
	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree	Not applicable
Children do not have access to a quiet area								

Pupils are sometimes confined to an area of teaching space due to limited space being available								
There is room for pupils to leave work in progress to								
I have a base in the classroom to store equipment for								
All pupils can reach necessary equipment								

Section B

These questions ask about other areas in the school

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor	Slightly agree	Agree	Strongly agree	Not applicable
Pupil toilets are easily accessible								
Toilets are not easy to supervise								
There are not enough toilets for pupils								
The design of the corridors allow children to move								
There are not enough small group rooms in the school								
Cloakrooms are secure								
There is not enough storage for pupils' coats and bags								
The design of the library inhibits teaching and								
In the library children are able to work at tables								
	Strongly disagree	Disagree	Slightly disagree	Neither agree nor	Slightly agree	Agree	Strongly agree	Not applicable
Children can reach the books in the library								
Furniture in the library is difficult to rearrange								
The library can easily accommodate								
A whole class cannot easily use the library								
The library is difficult to supervise								
The school building facilitates the teaching of music								
The school building facilitates the teaching of P.E.								

The school building facilitates the teaching of art and								
The school building facilitates the teaching of design								

Section C

Other aspects of the internal school environment

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor	Slightly agree	Agree	Strongly Agree	Not applicable
All pupils are able to reach and use necessary								
Pupils have access to a networked ICT system								
In ICT lessons I have access to a large demonstration								
I am not satisfied with ICT provision								
Children have easy access to their own belongings								
There is not enough space for displays								
Pupils are able to see a responsible adult at all times								
I have access to a dedicated space to meet with other								
I have access to workspace for individual								
	Strongly disagree	Disagree	Slightly disagree	Neither agree nor	Slightly agree	Agree	Strongly agree	Not applicable
The physical well being of pupils is well catered for in								
The design of the school buildings supports the								

Section D

This section will ask about the outdoor environment of the school

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor	Slightly agree	Agree	Strongly Agree	Not applicable
Needs for the outdoor curriculum are met in the								
The outdoor classroom is well designed								
The outdoor classroom provides for the needs of all								
The outdoor classroom is large enough								
The outdoor classroom provides adequate shelter								
The immediate school environment offers only limited								
The design of the school grounds enables children to								
Children with physical difficulties are able to access								
The design of the outside area ensures that all children can								
	Strongly disagree	Disagree	Slightly disagree	Neither agree nor	Slightly agree	Agree	Strongly agree	Not applicable
The outside area makes good use of space								
Play equipment is used frequently								
The children do not have enough space outside								
Children generally behave well on the playground								
There is enough large play equipment								
There is enough small play equipment								
The playground is unsafe								

The playground
encourages
imaginative play



Please write here any explanations you feel would help us to understand why you have given the answers you have, we would particularly like to hear why you are dissatisfied with any aspects of the school building. Continue on a separate sheet if necessary.

Administration staff

This section will ask questions on how the building impacts on the administration of the school.

	Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor	Slightly Agree	Agree	Strongly Agree	Not Applicable
The reception area is easily identifiable to								
Access to the school is not easily controlled								
The waiting area is large enough for visitors to wait								
The entrance to the site is clearly visible from the								
The reception area overlooks the main entrance and Pupils have easy access to the administration								
The administration room is not secure								
The administration room is well equipped								
Communication with other members of staff								
	Strongly disagree	Disagree	Slightly disagree	Neither agree nor	Slightly agree	Agree	Strongly agree	Not applicable
It is possible to contact every room from the								
The design of the administration room facilitates								
It is easy to move around the room								
The room is a pleasant place to work								
The temperature is easily controlled in the								
There is plenty of natural light in the room								
I am not able to control the amount of light in the								

I feel safe in the admin room								
I am disturbed by noise from outside the admin room								
I am able to access the rest of the school easily								
There is enough room for all necessary								

Maintenance staff, e.g. caretaker, cleaner

This section will ask questions about how easy the buildings are to maintain.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor	Slightly agree	Agree	Strongly agree	Not applicable
The building is easy to clean								
Equipment is easily accessible								
Equipment is easy to lock away from children								
There are not enough power points for mv								
There is not enough space to store equipment								
The design of the school encourages children to look								
It is hard to get water for cleaning								
There is enough space between furniture to clean								
The design of the classrooms make them easy to clean								
	Strongly disagree	Disagree	Slightly disagree	Neither agree nor	Slightly agree	Agree	Strongly agree	Not applicable
The design of the corridors make them easy to clean								
The design of the hall makes it easy to clean								
The design of the library makes it easy to clean								
Floors often get muddy								
The flooring is not easy to clean								
The design of the toilets make them easy to clean								
There is space to store my personal belongings								

The walls are easy to clean								
Vandalism is a problem in the school								
I have sometimes found graffiti on walls								
The children respect the building								

For kitchen staff and lunchtime supervisors

Section A

This section will ask you about the dining hall and kitchen

	Strongly disagree	Disagree	Slightly disagree	Neither disagree or agree	Slightly agree	Agree	Strongly agree	Not applicable
The design of the kitchen helps me to work efficiently								
The temperature in the kitchen is easily controlled								
There is plenty of natural light in the kitchen								
The children can easily see the food on offer								
Children find it hard to carry the food they choose								
The dining hall is not large enough								
The dining furniture is easy to set up								
The dining furniture does not store away easily								
	Strongly disagree	Disagree	Slightly disagree	Neither agree or disagree	Slightly agree	Agree	Strongly agree	Not applicable
The design of the dining hall helps when setting up and								
Children behave well in the dining hall								
The dining hall is a nice place to eat								
Children can quickly enter the dining hall								
When they have finished, children can quickly move								
Children are able to clear their mess away easily								
When the hall is set up for dining I cannot move								

The design of the dining hall helps me supervise the								
There is not enough space for children to eat properly								
Getting lunchboxes is a problem								
The design of the outside area ensures that all children can								

This section will ask you about the playground

	Strongly disagree	Disagree	Slightly disagree	Neither agree or disagree	Slightly agree	Agree	Strongly agree	Not applicable
The outside area makes good use of space								
The children do not use the play equipment outside								
The children do not have enough space outside								
Children generally behave well on the playground								
There is enough large play equipment to keep								
There is enough small play equipment to keep								
The playground is not a safe place								
The playground does not encourage children to play								
The large outside play equipment gets lots of use								

For Everyone.

	Senior management	Teacher	Teaching assistant	Maintenance or cleaning staff	Admin staff	Kitchen staff	Lunchtime supervisor	Parent
Please tick your role at the school								

Section A

This section will ask about your involvement in the design of the school

	Strongly disagree	Disagree	Slightly disagree	Neither agree or disagree	Slightly agree	Agree	Strongly agree	Not Applicable
I was consulted when the								
The designers did not listen to my opinions								
My opinions were taken into account								

The designers took into account the								
I was consulted at all stages								
	Strongly disagree	Disagree	Slightly disagree	Neither agree or disagree	Slightly agree	Agree	Strongly agree	Not Applicable
The designers shared their ideas								
It was hard to understand the designer's								
I was consulted for my opinion								
I am not satisfied with the amount of								

Section B

This section will ask you some general things about the school buildings

	Strongly disagree	Disagree	Slightly disagree	Neither agree or disagree	Slightly agree	Agree	Strongly agree	Not applicable
The entrance to the school is welcoming for								
The main entrance is hard to identify								
The waiting area in the foyer is pleasant								
The school building meets all my needs								
I am proud of the appearance of the school								
The school is a pleasant place to work or visit								
It is easy to move around the school								
It is hard to find my way around the school								
The school feels spacious								

	Strongly disagree	Disagree	Slightly disagree	Neither agree or disagree	Slightly agree	Agree	Strongly agree	Not Applicable
There is not enough natural light in the school								
The building is unpleasant to look at								
The design of the school buildings encourage a feeling								
The design of the school building encourages								
Children are happy to come to school								
The school buildings do not fit in well with their								
The school is a safe environment								

The school is a healthy environment								
The school encourages a sense of calm								

	Strongly disagree	Disagree	Slightly disagree	Neither agree or disagree	Slightly agree	Agree	Strongly agree	Not Applicable
The school appears to be a welcoming place								
There is not enough car parking for staff and								
My needs are met by the school building								
The school is an important part of the community								
The school is secure								

Name three things you like best about the school

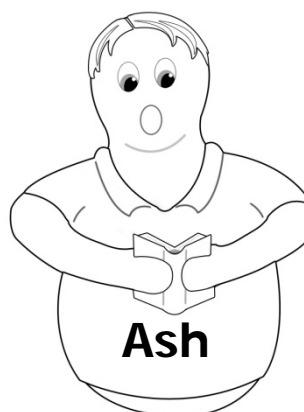
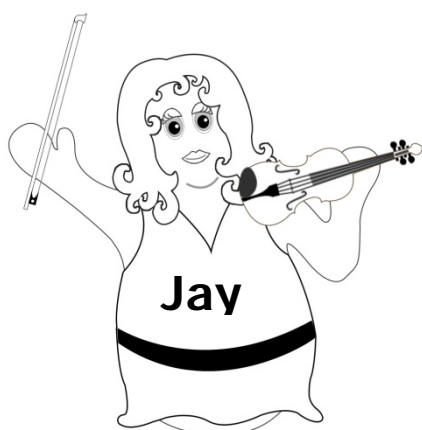
Name three things you dislike about the school

If you were to redesign the school which three things would be your priority?

Please use the rest of this page to tell us anything else about the school buildings. Continue overleaf if necessary.

Many thanks for taking the time to complete this questionnaire

Cool Crew Come to School



Your Name.....

Your School.....

Your Class.....

Your Age.....

Welcome to our school

Today is the first day at your school for the Cool Crew. They are going to spend the day with you to find out all about your school buildings.

First they have to find the way to your classroom.

Is your classroom easy to find? **Yes No**

Cal wants to put his bag away.

Is there a special place for your coats and bags? **Yes No**

Is there enough space for Cal's bag? **Yes No**

Cal remembers that he's left his pencil in his bag.

Can he get to his bag quickly from his classroom? **Yes No**

Underline or circle the words Cal would choose to describe your cloakroom (the place you leave your coats) from the list below.

bright	dangerous	uncomfortable	friendly
	dark		safe
scary		squashed	
	comfortable		lots of space

Your Classroom

The Cool Crew have come to your classroom. They want to sit at a desk.

Is there enough space for them to sit comfortably? **Yes No**

The teacher is now explaining what everyone should do next.

Can everyone see the whiteboard clearly? **Yes No**

Can they hear the teacher clearly? **Yes No**

Does the class ever get disturbed by noise from another room or outside? **Yes No**

It is now time to do some work in groups.

Is there room for the Cool Crew to sit comfortably to work in a group?
Yes No

Jay wants to work quietly on her own.

Is there a place in the classroom where she can work quietly on her own? **Yes No**

Ash says that he feels too cold. Mo says she feels too hot.

Does your classroom often get too hot? **Yes No**

Does your classroom often get too cold? **Yes No**

The Cool Crew would like to see some of the children's work.

Are there enough places to show the children's work? **Yes No**

Now underline or circle four words or phrases from the list below that best describe your classroom

calm happy interesting hard to work in
dark noisy unfriendly bright sad
easy to work in quiet scary safe boring

Write a sentence or some more words of your own to describe your classroom.

Classrooms are very important places as they are where you go to work and to learn.

Do you think that your classroom is a good place to work and to learn?
Yes No

Give a reason for your answer

Some classrooms have doors that open between them so that two or more classrooms may be opened up to become one big room.

Does your classroom have these sliding doors? Yes No
--

If your classroom does have them how often do they get opened up?

never only on special occasions less than once a week

once a week most days every day

they are always open

Do the sliding doors ever distract you from your work? **Yes** **No**

Are the sliding doors a good idea? **Yes** **No**

In the box below write a reason for your answer

[illegible]

Draw a map of your classroom. Show and label all the important places.

Science

Mo's favourite lesson is science so she is very pleased when the teacher tells her that she will be doing an experiment. The teacher stands at the front of the classroom and shows the class what to do.

Can everyone see the teacher clearly? **Yes No**

Can everyone hear the teacher clearly? **Yes No**

Mo needs some water for the experiment.

Is there a sink nearby? **Yes No**

Is the sink in the classroom? **Yes No**

Can she manage to turn the taps on by herself? **Yes No**

Mo has to leave her experiment somewhere where it won't be disturbed.

Is there a special place where she can leave the experiment where it won't be disturbed? **Yes No**



Toilets

Before the class goes outside, Cal needs the toilet.

Is the toilet far from the classroom? **Yes No**

Are there enough toilets? **Yes No**

Are the toilets nice to use? **Yes No**

Music



Jay loves music! She can't wait for the music lesson.

Is there a special room for music lessons? **Yes No**

Do music lessons ever disturb other classes? **Yes No**

ICT

It's time for ICT. The Cool Crew want to use the computers.

Underline or circle the sentence that best describes your ICT room

It is a separate room

It is a part of a corridor

The teacher wants to show the whole class how to do something on the computers.

Are the whole class able to see what the teacher is doing? **Yes No**

Is there a special screen to show the class what to do? **Yes No**

Are there enough computers for everyone? **Yes No**

Do some people have to share a computer? **Yes No**

Is there enough space for everyone in the class to sit comfortably at a computer? **Yes No**

Does the lesson ever get disturbed by people from other classes? **Yes No**

Back in the classroom Mo wants to use a computer to do some writing in her literacy lesson.

How many computers are there in the classroom?

Are there enough? **Yes No**

Assembly

It's time for assembly. The whole school will be there.

Is there enough space for everyone to sit comfortably during assembly?
Yes No

The head teacher is telling the school something very important. Can everyone hear clearly? **Yes No**

Someone from another class is holding up a picture they have drawn. Is everyone able to see it clearly? **Yes No**

Can everyone get in and out of the hall quickly? **Yes No**

Library

After assembly the Cool Crew visits the library with your class.

Underline or circle the sentence that best describes your library

It is a separate room

It is a part of a corridor

Are there enough tables and chairs for everyone to sit down?
Yes No

Ash has found a very exciting book and wants to sit down to read it.



Is there somewhere comfortable for him to sit down and enjoy his book in the library? **Yes No**

Can everyone reach the books on the shelves? **Yes No**

Underline or circle some words or phrases from the list below that best describe the library.

peaceful	calm	noisy	uncomfortable
I get disturbed	cramped	quiet	ordinary
comfortable	special	lots of space	

Use this page to draw and label a map of your school. Show all the places you think are important.

Shared Area

The Cool Crew notice a large area in the corridor next to the classroom where some children are working

Is there a shared area next to your classroom? **Yes No**

The cool crew wonder what the shared area is used for

In the box below write some of the things that your shared area gets used for.

Do you think that having a shared area outside the classroom is a good idea? **Yes No**

Give a reason for your answer

P.E. and Games

Cal and Jay love P.E. and games.

Is there a special place to get changed for P.E? **Yes No**

Cal and Jay are sent to get some equipment. Can they reach it easily?
Yes No

They go outside for their lesson, but it soon starts to rain. The class have to come inside for their lesson.



Where do they go?

Is this place ever used for anything else? **Yes No**

If so, what?

Do you ever have to miss indoor P.E. because there is nowhere to go?
Yes No

Lunchtime

The Cool Crew have worked hard all morning so they are very hungry! They take a look at the dining hall and decide to have a school lunch.

Can they see all the food on offer? **Yes No**

Do they have far to carry their tray? **Yes No**

Is there room for the Cool Crew to sit comfortably at a table with their friends? **Yes No**

Do the Cool Crew think that it is a nice place to eat? **Yes No**

Give a reason for your answer in the box below

Underline or circle four words that best describe your dining hall

noisy bright scary uncomfortable clean
dark nice horrible comfortable dirty squashed
lots of space friendly quiet

Quiet Rooms

Mo and some of her friends need some extra help with reading.

Is there a special room they go to? **Yes No**

Is the room big enough for Mo and her friends? **Yes No**

Is it used for anything else? **Yes No**

Is the room a nice place to go? **Yes No**

Art

Cal is very good at art. He wants to be an artist when he grows up so he is very pleased that they are going to have an art lesson today.

Is there room for everyone to paint at the same time? **Yes No**

Does everyone stay in the classroom to paint? **Yes No**

Are all the things Cal needs to paint nearby? **Yes No**

Can he reach all the equipment himself? **Yes No**

When Cal has finished his work is there a special place for him to leave it? **Yes No**

Will it be disturbed? **Yes No**



Playtime

It's time to go out to play.

Ash wants to play football.

Is there somewhere he can play? **Yes No**

Will he disturb other children? **Yes No**

Jay wants to see some wildlife.

Is there somewhere to see wildlife outside? **Yes No**

It's very hot. Cal wants to find some shade.

Is there somewhere in the shade for Cal to sit? **Yes No**

Mo is not sure what to play.

Are there lots of different things to choose from in the playground? **Yes No**

Underline or circle four of these words or phrases that best describe your playground

places to be quiet	exciting	lots to do	happy
can see nature	nowhere to sit quietly	sad	safe
too small	scary	lots of equipment	boring

Home time

It's time for the Crew to go home now. They've had a very busy day at your school.

What do you think they would like about your school building?

What do you think they would not like about your school building?

What do you think would they like to change about your school building?

Is there anything else you would like to say about your school building?

**Thank you for
telling the Cool**

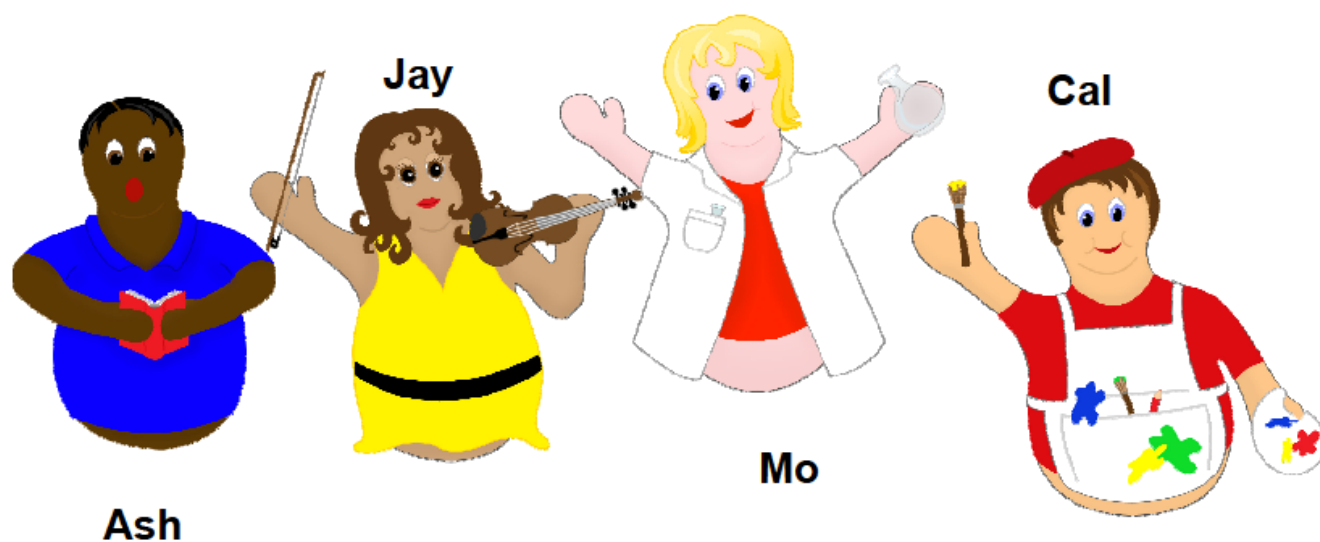
Crew all about your school

Don't forget to colour in the pictures of the Cool Crew. There will be a prize for the best colouring.

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Cool Crew Come to School



By
Michelle Newman and
Philippa Davies



The Cool Crew arrive at school.

Here is Mo with her Dad.

This is the first time that she's seen your school.

Do you think she will like the way your school looks?



The Cool Crew are going to spend the day in your school.

They come to your classroom.

Is there enough space in your classroom?

Does your classroom make you feel happy or sad?

Is your classroom a good place to work



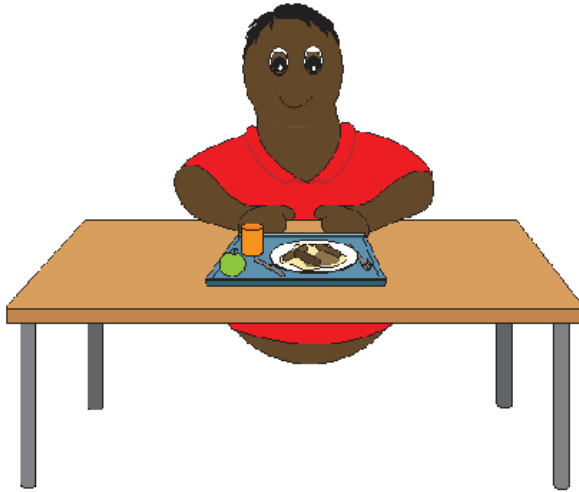
It's time for assembly

**Is there room for everyone
to sit down comfortably?**

**Can everyone see the
teacher at the front?**

**Can everyone hear the
teacher?**

**Is the hall a good
place for assemblies?**



It is time for lunch. Ash is having a school dinner.

Is there enough room for Ash to sit with his friends?

Can he see all the food to choose from?

Is the dining hall a nice place to eat?



Jay loves music lessons. She is very good at playing the violin

Do you like music?

Is there a special room for music lessons?

Do music lessons ever disturb other classes?

Is the music room a good place to work and learn?

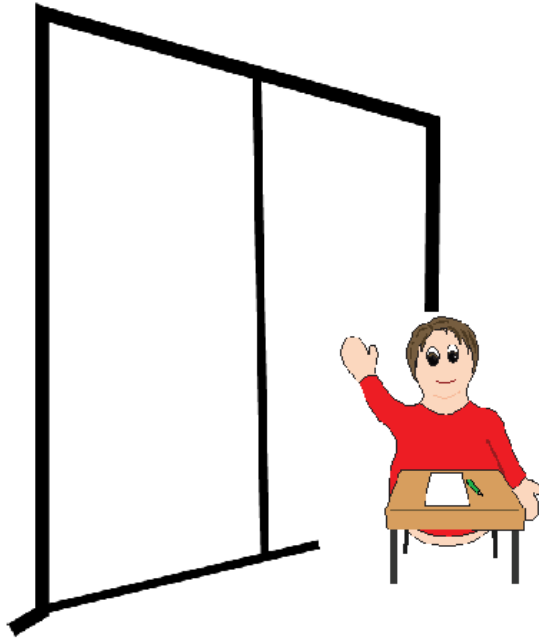


Mo's favourite lesson is science.

She is working with a teacher in the shared area outside the classroom.

Do you often use the shared area outside the classroom?

Do you think having a shared area is a good idea?



Some classrooms have sliding doors between them so that they can become one big classroom.

Does your classroom have sliding doors?

Do they get opened much?

Are sliding doors between classrooms a good idea?

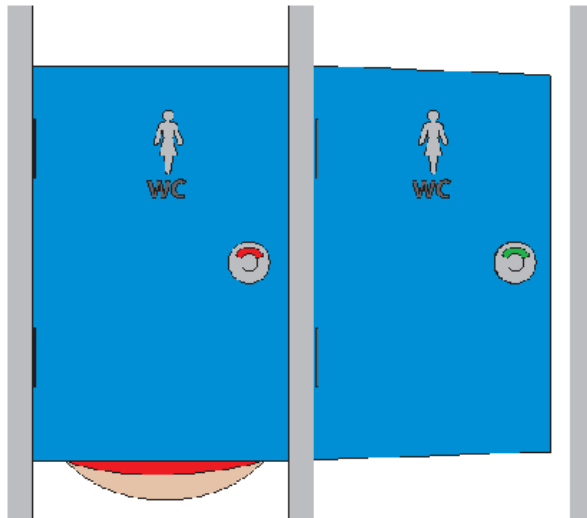


Mo's favourite lesson is science.

She is working with a teacher in the shared area outside the classroom.

Do you often use the shared area outside the classroom?

Do you think having a shared area is a good idea?



The Cool Crew need to use the toilet.

Are there enough toilets for everyone?

Are the toilets nice to use?



It is playtime.

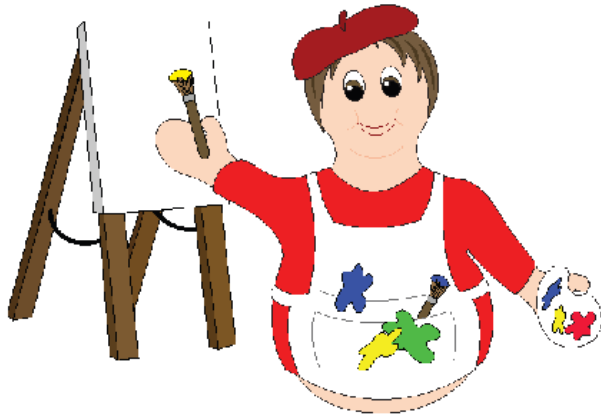
Jay and Cal are playing football.

Will they disturb other children?

Is there somewhere to sit quietly?

Are there lots of things to choose to do outside?

Is your playground a nice place to play?



Cal loves painting

Do you like painting?

**Is there enough room for
you to paint in your
classroom?**

**Can you reach everything
you need to paint?**

**Is your classroom a
good place to do
painting?**



The cool crew are going home now. They have had a great day.

What do you think their favourite part of the school is?



Is there anything they would not like about your school buildings?

Thank you for telling the Cool Crew all about your school.

Cool Crew Come to School

