"We need the basics done well, and it needs to be childproof": Teacher and architect experiences of school buildings in the UK

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Abstract

This thesis explores the built environment of schools in the UK, bringing into dialogue the experiences of architects and teachers. Various discussions throughout sociological literature address the design of spaces and the intentions behind those designs, including work from theorists such as Bourdieu, Foucault and Latour. Much of this literature relates to school building design, particularly in the areas of behaviour, surveillance and productivity, and their relationship with the built environment. Through individual, semi-structured interviews, the experiences of architects and teachers were explored, which underlined the needs of both groups and sometimes the disconnect between their experiences. The key themes – *Participation, Risky Schools* and *Design for Pedagogy* – demonstrated a shared desire for some degree of end-user consultation, often hampered by practical and financial constraints; the multifaceted risks associated with school buildings, including financial, safety, behavioural, and environmental concerns; and the complex interplay between pedagogy and school design. The exploration of these themes draws on researchers such as Sherry Arnstein and her work on citizen participation, Deborah Lupton's work on risk, and Rob Imrie's work on disability and the built environment. The findings reveal that architects value consultation and end-user ownership and are also committed to environmental sustainability and futureproofing. They recognise the importance of adaptable spaces designed to minimise environmental impacts, adapt to evolving practices in education, and accommodate fluctuating pupil numbers. On the other hand, teachers' experience of consultation is mostly surface level. They often prioritise basic functionality of their buildings, sometimes feeling that aesthetics overshadow practicality, possibly due to a lack of consultation. Architects and teachers both indicated that funding constraints have a significant impact on new builds, renovations, and even basic maintenance. Ultimately, this thesis suggests that collaboration between architects and teachers, alongside adequate funding, is needed to provide and maintain high-quality learning spaces.

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Declaration

I declare that this thesis is a presentation of original work and I am the sole author. This work has not previously been presented for a degree or other qualification at this University or elsewhere. All sources are acknowledged as references.

1 Introduction

1.1 The challenge of school buildings

This thesis has been written at a time when the significant issues facing school buildings in the UK are being brought to light and widely publicised in the media and public domains, including the emergence of the issue of reinforced autoclaved aerated concrete (RAAC) in a wide range of public buildings. At this moment in time, with the challenges facing schools widely known, this thesis highlights wider issues concerning school architecture and its associated risks. Further, this thesis presents other, less publicised issues, including the relationship between school buildings and pedagogy, including the current ideas about pedagogy and how these changing ideas over time have affected the ability of the UK's school buildings estate to be fit for purpose. By examining these areas, this thesis addresses a gap in knowledge around how architects and teachers envisage and experience school building design and the tensions and consistencies between design intentions and teachers' lived experiences. Key findings include the importance of user consultation and participatory design embedded from the start of the design process, and ways in which more effective consultation can be achieved.

Schools are regarded as a central component of our society in the United Kingdom – they are mostly regarded as safe places for children and attendance, up to a certain age, has long been compulsory, with multiple amendments to the Elementary Education Act 1870 over the years to extend the compulsory age (Elementary Education Act 1870, 33 & 34 Vict., c. 75). Yet, the functioning and maintenance of their buildings pose numerous challenges – in recent years the most notable of these include the spread of COVID-19 within schools and the issue of RAAC. While the emergency measures brought in to limit the spread of COVID-19 have mostly gone – there is no longer the need for social distancing of children, extra ventilation of classrooms, or reducing the numbers of pupils allowed in a space – the recent exposure of the potential dangers of RAAC, and its widespread use in school buildings, is yet to be resolved (Merritt, 2024; Murugesu, 2024; Shearing, 2024a).

Much like asbestos, which is now recognised as highly carcinogenic and therefore unsafe, RAAC was used in public buildings, including schools, from the 1950s to the 1990s (RICS, 2024; UK Health Security Agency, 2024). Thanks to its lightweight, aerated composition it was cheaper than traditional concrete and provided good thermal insulation and fire resistance (RICS, 2024). Its most common use was in preformed roof panels. Although RAAC itself is safe – not carcinogenic or otherwise dangerous – it has a limited

lifespan due to its composition. The safe lifespan of RAAC panels, of approximately 20 years, has long been known to construction professionals and government, and there have been incidents of collapse dating back to the 1980's (Merritt, 2024; RICS, 2024). However, the issue did not become significant for schools until 2018, when the roof of a Primary School in Kent collapsed without warning – this followed an earlier collapse at another school in 2017 (Merritt, 2024). The 2018 incident prompted local government and the Department for Education (DfE) to call for inspections of all school buildings. At that time, DfE guidance was for schools where RAAC was found to consult a building surveyor or structural engineer and inform the DfE (DfE, 2023). Further to this, in 2022 the DfE circulated a questionnaire seeking information from responsible bodies on the presence of RAAC in school buildings (Merritt, 2024).

In the summer of 2023, following three incidents of partial roof collapses in schools in the UK, the DfE's Chief Operating Officer further advised that "all spaces with RAAC should be closed" (Merritt, 2024). This led to the temporary closure of some school buildings just before the return from the school summer holiday in September 2023. Following the incidents of collapse in 2023, there were numerous news stories and press releases with significant public interest in the issue (Doherty and Clarke, 2023; Evans, 2023; Griffiths, 2023). The government came under significant scrutiny in relation to its record on school funding, and also because of the discovery that there had been safety warnings about RAAC for several years (Merritt, 2024). Whilst the presence of RAAC raises concerns for the long-term structural integrity of a significant number of school buildings – 231 in England (DfE, 2023) – in the short to medium term, the practical implications are also highly concerning.

Since the school roof collapses in 2023 and subsequent media attention, it has also come to light that RAAC is present in hospitals, council buildings, theatres, museums, universities and many other publicly accessible buildings (Davies, 2024; Dawkins, 2024; McLean, 2024; Russell, 2024; Doherty and Clarke, 2023). Some hospitals have had to close areas, or entire wings, and some other public buildings have had to close entirely (Davies, 2024; Dawkins, 2024; McLean, 2024). Meanwhile, in the school buildings estate, many schools continue to have partial closures in place and have moved some pupils into temporary classrooms to ensure the safety of their staff and pupils (Heath, 2024; Roy and Edgar, 2024). Data also show that as of 11th January 2024 one school still had hybrid learning arrangements in place for some pupils as a result of their school's RAAC building closures (HC Deb 5 January 2024). Hence, concerns have been raised around the amount of learning time lost by pupils in affected schools, on top of the time lost in the three years prior to the RAAC closures as a result of the COVID-19 pandemic (Cooke and Devlin, 2024a; Murugesu, 2024; Shearing, 2024b).

There have been calls from many groups, including parents, pupils, teachers and politicians, for pupils in schools which have been significantly affected by RAAC to receive leniency in exam marking (Cooke and Devlin, 2024b; Gorard and Siddiqui, 2024; Murugesu, 2024; Griffiths, 2023). Education researchers from Durham University concluded that the "exceptional circumstances described [in the report] are not covered by existing exam board and regulator policies on special considerations for students" and persuasively argued for mark inflation of up to 10% for the most severely impacted school pupils (Gorard and Siddiqui, 2024, p.14). However, these calls have been refused by regulators and exam boards, who have suggested the situation does not warrant special considerations for these pupils and the chief regulator for The Office of Qualifications and Examinations Regulation (Ofqual) suggested that doing so would make it difficult to "draw a line and maintain fairness" for other pupils (TES, 2024). Pupils received assessment modifications from 2020 to 2022 ranging from teacher-assessed grades to leniency in grade boundaries after the onset of the COVID-19 pandemic (Roberts and Danechi, 2022). However, Ofqual did not feel the RAAC disruptions warranted similar consideration (TES, 2024). Guidance for schools affected by RAAC was similar to typical special considerations that can be requested for individual students impacted by unforeseen disruptions or where schools are disrupted, for example, by fire or flood (JCQ, 2024).

Teaching unions have appealed for more money from the government to fix the problems and expedite the replacement of the concrete. The main unions representing school staff have also written open letters to the government (specifically, then Education Secretary Gillian Keegan and then Prime Minister Rishi Sunak) pressing for substantive action and acknowledgement from government of the required investment in the UK's school buildings (Barton et al., 2023a, 2023b; NAHT, 2023; Hughes et al., 2022). In an open letter addressed to the Prime Minister in September 2023, the leaders of numerous unions show anger and serious concern over the "crippling underfunding of our school buildings" (Barton et al., 2023a). They highlighted the ongoing concerns over the UK's school buildings estate, which were presented in detail by the National Audit Office in a report in June 2023 (Davies, 2023). As noted by the leaders of numerous teaching and school staff unions (Barton et al., 2023a), rather than being an isolated issue with a problematic material, the RAAC situation has highlighted the wider issues facing the UK school buildings estate. Teachers have long been aware of the lack of necessary funding for building high quality schools and the lack of funding for maintenance to ensure schools do not reach a state of disrepair. These concerns have also been reinforced by the National Audit Office, whose report detailed a significant shortfall in funding for even the most essential school building maintenance across the UK's school estate (Davies, 2023).

The emergence of the issue of RAAC in school buildings comes after a period of underfunding and cost-cutting in the education sector, throughout the Conservative, and previous Conservative-Liberal Democrat coalition governments in the UK. The totality of the challenges facing the school building estate in the UK going forward are a culmination of the policies and practices of the last 14 years, and indeed the post-millennial era of education policies in all their variety. The New Labour governments approach, in introducing the Building Schools for the Future programme which aimed to deliver progressive pedagogies through school buildings, at significant monetary cost, largely preceded the global financial crisis with its pinnacle largely recognised as the collapse of the Lehman Brothers investment bank in 2008 (Bank of England, 2018). What followed was a recession across many of the world's highest grossing economies, and in 2010, following the general election and new coalition government between David Cameron's Conservative's and Nick Clegg's Liberal Democrats were years of austerity. In line with austerity policies was cost-cutting underpinning the government school building programmes and funding going forward, including the abolition of the Building Schools for the Future programme by then Education Secretary Michael Gove following a short consultation and data gathering period (James, 2011). The combination, and erratic nature, of these policies since the millennium has largely failed to address the growing and serious challenges the UK's school buildings face, in terms of maintenance, space and practicalities of teaching in the modern world – such as access to modern technology and equipment.

1.2 Importance of school architecture

Alongside the current key challenges outlined above, the importance of school architecture generally, and the interplay between people and their built environment, is well established. There is a significant base of literature in sociological disciplines suggesting that architecture has a substantial influence on the use of space and the behaviour of people within the space. This has been demonstrated in research including that conducted in relation to the impact religious buildings have on their local environment and behaviour (Brenneman and Miller, 2016), and more general arguments on the political and social impact of artefacts, including buildings and objects within a space (Winner, 1999). Butterfield and Martin (2014) also established that there were particular types of architecture that were more inviting for users of cancer care centres, which was consistently agreed upon by participants. This prior research has demonstrated the importance of the interaction between people and space, including the impact the built environment has on its inhabitants and vice

versa. This relationship is complex and reinforces the need to understand the different perspectives of users and stakeholders in the design of buildings and spaces.

Moving specifically to the role of architecture and space in the context of schools, the environment's ability to facilitate children's learning has been discussed at length in research (see for example Cohen, 2010; Halpin, 2007; Smith, 1974). Research has examined a variety of different school spaces and contexts, including Burke's interest in the eating areas of schools and the reproduction of inequality (Burke, 2005); the significance of outdoor playgrounds and informal use of space in schools (Armitage, 2005); and Blishen's notable work looking at what children want from their schools (1969). In the plethora of educational research, links can be made, whether explicit or interpretive, to the importance of the architecture of educational spaces in relation to inequality, prevailing concepts of childhood, and educational pedagogies. Additionally, there is evidence that stakeholder involvement with architects (including children and teachers) can positively influence the design process and subsequent use of the educational space (Birch et al., 2017).

The engagement of architects with stakeholders in the design process for school buildings is an expectation within the government's guidelines (see Building Bulletins 98 and 99: DfES, 2014a, 2014b). The building bulletins indicate that a school's ethos, subject specialisms and other factors should be considered as part of the design process and may influence the design needs of a school, through discussion with school staff and the community. However, there is no explicit suggestion on the ways in which, or the extent to which, architects should engage these stakeholders. In the Royal Institute of British Architects (RIBA) guidance to architects generally (RIBA, 2020), not specific to school building design, there are specific details on stakeholder and end-user engagement and consultation though. In particular, the RIBA Plan of Work indicates significant stakeholder engagement should take place in the first three design stages, and in the final two stages (which relate to handing the building over to its new users). In total, this equates to significant stakeholder engagement in five out of eight design stages, and architects in the UK are expected to take on board RIBA recommendations.

The design of school buildings has also received increasing public interest in recent years, both positive and negative. For example, schools have been nominated for, and won, the Stirling Prize, but many schools have also come under scrutiny during the COVID-19 pandemic for their ventilation and access to outdoor spaces (or lack thereof) and the current RAAC challenges. It is already understood that there are complex relationships between educational engagement and the built environment of the school, with many modern school buildings boasting innovative design features intended to improve the learning experience

(DfES, 2006). However, “there is little existing research that focuses on how educational spaces are used as tools to facilitate the changing needs and demands of curriculum and pedagogy” (OECD, 2009, p.17). Although this report was written 15 years ago, the critique is still relevant to research into educational spaces today, as little has changed in the UK’s school buildings estate in the last 15 years, with the exception of significant degradation and a lack of sufficient funding (Davies, 2023).

In particular, this thesis highlights the importance of exploring the perspectives of a variety of users and stakeholders in relation to school building design, to fully explore the importance of school spaces from these different perspectives. Previous research in the area of building design in different contexts has demonstrated the usefulness of understanding the perspectives of different users and stakeholders (Buse, Martin and Nettleton, 2018). Existing research on education buildings has focused on the perspectives of a singular set of stakeholders. This mostly consists of end-users, namely children and teachers (Woolner, 2014; Blishen, 1969), although there are also studies which focus on the professional input of architects and design professionals (Plotka, 2016; DfES, 2006). However, there is a lack of research bringing together the perspectives of architects and teachers into dialogue. The input of architects in an experiential way alongside the perspectives of teachers as end-users provides insight into the tensions between the design intentions and lived experiences of buildings. The dialogue between the views of these two stakeholder groups allows for the importance of school buildings to be explored as a whole, incorporating elements of the design of spaces with the pedagogic and everyday considerations of teaching professionals.

1.3 Research aims

The research is particularly timely, due to the state of disrepair of a significant portion of the UK’s school buildings estate, and the recent identification of RAAC as a possibly dangerous material used in a significant number of school buildings. There is contemporary interest, publicly and politically, in school buildings (and how their state of repair and/or layout affects children’s access to and engagement with education). This research will contribute to knowledge in this area, by providing a realist-based understanding of the experiences and needs of teachers in the UK’s school buildings, and contextual and practical insight from architects, in order to explore an overarching research question: How do architects and teachers envisage and experience school building design? To address this, I will explore why school spaces have been designed in certain ways and the intention

and practical aspects behind these designs through interviews with architects who have significant experience working on school building projects in the UK. I will also explore the lived experiences of teachers and how the design of school spaces effects their everyday teaching and work.

The inclusion of architects as participants offers a relatively untapped contribution in this area, as they are not often consulted in this type of research into their perspectives and experiences – rather, they are generally included in research which seeks their professional design judgements. There is limited research which includes architects as participants in this way (such as Buse, Martin and Nettleton, 2018), gaining insight into their experiences and perspectives will add to the body of knowledge on school building design. Further, while the perspectives and lived experiences of teachers has been part of previous research in relation to school spaces, bringing this together with the views of architects is a novel approach which can offer greater insight.

In line with the contribution this research intends to make, I will address the following broad research aims, which feed into the overarching research question of *how do architects and teachers envisage and experience school building design?*

1. To understand what architects and teachers want from school buildings.
2. To examine the commonalities and tensions between architects' design intentions and teachers' lived experiences of school buildings.
3. To explore the current 'moment' in the history of the UK's school building estate.

In order to address the above aims, I will gain insight into the lived experiences of participants to answer the following specific questions:

Architect participants:

1. What are the main considerations when planning a new school building?
2. What are the particular challenges of designing school buildings?
3. What is the process for designing school buildings and how has the design and planning of school buildings changed over time?
4. How do architects feel school buildings affect their users?

Teacher participants:

1. How do teachers use their classrooms and how is this affected by the spatial design?
2. What changes would teachers ideally make to their school spaces and how have they adapted them?

3. How do their school spaces affect their teaching practice, pedagogy and experiences of teaching?
4. How do teachers feel about their school spaces?

Consistent with the above aims, this research will not present idealist ideas of design. Rather, by combining the needs and lived experiences of teachers with architects' ideas and practical considerations, I will present constructive and viable ways of improving the process of school building design, in relation to both new build projects and the renovation and maintenance of existing buildings.

1.4 Thesis outline

Following this brief introduction to the importance of this area of research, which is particularly topical given increased public awareness of the challenges faced by school buildings due to RAAC, the thesis will follow the below structure.

Chapter 2 will explore relevant literature and existing research, including relating to sociology and space, education and space, and pedagogy. The first section, on Sociology and space will explore how building design and architecture in affect the users of space and the community. This covers aspects such as the affect of buildings on behaviour , which have been explored in settings including hospitals and public spaces (Buse, Martin and Nettleton, 2018; Adams et al., 2010; Welsh and Farrington, 2008). Surveillance and spatial design is also explored, with a focus on theorists such as Foucault and Gieryn, whose work examines how buildings and spatial design can exert control over people (Gieryn, 2000; Foucault, 1977). Specifically, this can have the effect of enforcing segregation of particular groups (Gieryn, 2000) or creating a means of passive surveillance such as that evoked in the Panopticon concept (Foucault, 1977; Bentham, [1791] 2009). Finally, research into productivity, which oftens relates to work environments, is explored. There are connections between the effect of spatial design on people's behaviour and its ability to exert control through surveillance and resulting wellbeing and productivity (Hähn, Essah and Blanusa, 2020; Kamarulzaman et al., 2011). However, there are also many other significant factors, with researchers in this area often focusing on the physical work environments and how wellbeing affects productivity (Kamarulzaman et al., 2011). The affect of space on wellbeing, and therefore working practices and productivity is shown to relate to factors including lighting, the presence of plants, temperature and noise levels (Ashkanasy, Ayoko and Jehn,

2014; Vischer, 2007; Oldham and Rotchford, 1983). These elements, behaviour, surveillance and control, and spatial impacts on wellbeing and productivity can all be extended to education buildings, as examined in Plotka's report for the Royal Institute of British Architects (RIBA) (Plotka, 2016).

In the following section, education and space is specifically explored, with discussion of the current literature on the impacts of the spatial design of educational institutions. In contemporary discourse, there has been a shifting focus towards health in school buildings, particularly in light of the COVID-19 pandemic. Research in this area ranges from a focus on outdoor space and it's connection to tackling health inequalities and better education outcomes (Gray and Kellas, 2020; Maynard, Waters and Clement, 2013; Broadhead, Wood and Howard, 2010). There is also recognition that the spatial design of school buildings can affect pupils' learning, as with adults' productivity, and the particular effects of school spaces on pupils with additional needs (Mumovic, Chatzidiakou and Ahmed, 2019; Matthews and Lippman, 2016; Plotka, 2016). There is also significant research concerning the importance of technology and futureproofing in school buildings, including the incorporation of modern technology for teaching and learning purposes and the use of adaptable designs to account for changing pedagogic and societal standards. Researchers have suggested that school spaces can be more fit-for-purpose if designed with consideration for technology and teaching tools, rather than only thinking about these at the end of a school's construction (Woolner, 2014). In addition to futureproofing from the perspective of pedagogy and technology, research has also indicated the need for schools to be designed for a sustainable future. This includes praise for schools designed to minimise their carbon impact and incorporate sustainable elements into designs, such as passive heating (OECD, 1996). However, these elements are not yet used effectively in many cases (Burman, Kimpian and Mumovic, 2018).

This is followed by an examination of the current research and literature around pedagogy. This includes theories and practices of learning and the value of inclusive practice and participation in education, followed by a specific exploration of key concepts within the UK education system such as *challenge*, *sustained shared thinking*, and *learning outside the classroom*. In the UK, teachers and teacher education generally take a progressive stance towards educational pedagogy. In contemporary teaching, this has meant a broad focus on the importance of play in early years learning, outdoor provision, and collaborative learning practices (Knight, 2013; Lumby, 2011; Broadhead, Wood and Howard, 2010; Siraj-Blatchford, 2009). In relation to appropriate challenge and outdoor learning, the Forest School concept has been partially adopted in many UK primary schools and there is significant research into the approach (Knight, 2013; Huggins, 2012; Williams-Siegfredson,

2012). Csikszentmihalyi's well-regarded notion of *flow* – a state of concentration and enjoyment which can occur when learning a skill or performing an activity that is engaging and appropriately challenging – can also be drawn into discussions on many of the concepts used in contemporary teaching and education including challenge, sustained shared thinking and learning outside the classroom (Gyllenpalm, 2018; Shernoff and Csikszentmihalyi, 2009; Csikszentmihalyi, 1990a).

Drawing from the above review of existing literature, the interplay between pedagogy (theories of learning) and space with be explored. While there is limited specific research on the most effective spatial design for teaching and learning (Harrison and Hutton, 2014), existing research on the effectiveness of learning spaces and research into other types of buildings and how they affect their uses can be explored in relation to schools and learning (Barrett et al., 2015; Lewinski, 2015; Gislason, 2009).

Chapter 2 is rounded off with an introduction to the history of school building design, providing context on political, design and pedagogic changes through the history of institutionalised education in the UK. This will also include an exploration of the funding of schools buildings in the UK, from an overview of historical private funders, such as schools and philanthropists, through to detailed information on government school building programmes since the millennium, including Building Schools for the Future (BSF) and the Priority School Building Programme (PSBP).

Chapter 3 will present the methodological approach and the data collection methods adopted in this research. The research has been approached from a Deweyan pragmatic methodological approach (Dewey, Hickman and Alexander, 1998), situated within a social constructionist understanding of experience (Lincoln and Guba, 1985). An explanation of the data collection and analysis methods will follow the epistemological framing. Interviews were conducted in a semi-structured way, with both architect participants and teacher/school staff participants. The methods were similar for both groups and included the use of a virtual translation of photo-elicitation methods, although they varied slightly due to my own positioning as an insider to the teacher interviews and the need for most interviews to take place virtually due to COVID-19 pandemic precautions. My situation as an insider to the teacher interviews and an outsider to architect interviews is explored and discussed reflexively. The sampling, recruitment and interview methods are examined in depth, followed by discussion of the thematic analysis methods, which incorporate line drawings into the analysis process offering a unique approach in sociological research (Brown et al., 2021). The ethical considerations and limitations of the research are also detailed.

In Chapters 4, 5 and 6 the data will be explored in depth, with the presentation of three key themes. The three themes drawn from the data collected were titled *Participation*, *Risky Buildings*, and *Design for Pedagogy*. Chapter 4, *Participation*, will focus on elements of school staff participation and consultation in the design process were raised by architect and school participants. Three main 'types' of participation were discussed: a lack of participation and resulting problems with the design or usefulness of the spaces; tokenistic engagement opportunities, in which teaching staff could offer their thoughts, but the plans were largely finalised without their input; and moderately collaborative design processes, with architects offering ideas and suggestions and also taking on board the ideas presented by school staff. This theme builds on and extends Sherry Arnstein's work on citizen participation (1969), and the many theorists who followed or built on her work (such as Botchwey et al., 2019; Gaber, 2019; Hart, 1992; Connor, 1988), by applying this work to the context of school building design and using it to help understand the perspectives of architects and teachers.

Chapter 5, *Risky Schools*, discusses how concepts of risk have been explored in a myriad contexts by social theorists, with vulnerable groups often viewed by society as being *at risk* – for example children and older people. Participants' explorations of the risk inherent within their school buildings, and the design process, were examined through a critical realist lens – acknowledging that risks exist externally but are also interpreted differently due to individual perceptions and experiences. The main risks identified by architects were around budget constraints and the environmental sustainability of buildings. On the other hand, teachers were largely concerned with how their buildings affected their behaviour management strategies and the surveillance of pupils. Additionally, participants across both groups shared the significant risks of a lack of funding available for the basic maintenance of school buildings. The findings illuminate commonalities and differences in how risk is conceptualised by architects and teachers, and tensions between perceptions of risk and pedagogic principles.

Chapter 6, *Design for Pedagogy*, reflects how school staff often focused on how their classrooms and schools impacted their teaching practices and ability to effectively do their jobs. This link between pedagogy and space was sometimes referred to by architects too, although from a different perspective. The main themes explored here were that of *Pedagogy* – relating to individual teachers, subjects and classrooms; and *Ethos* – the wider, whole-school atmosphere.

Chapter 7 will bring together the key findings and conclusions drawn from the data analysis. I will draw out the main findings from the three themes presented, relating to the importance of end-user consultation in the design process, the balance of risks in designing

school buildings, and the financial implications which range from short-term cost-cutting measures in funding streams to long-term implications of underfunding and poor-quality buildings. There is a clear sense in the data that the first two of these themes also relates to the third – cost-cutting and budget constraints have an impact on the level of consultation or participatory design that can be carried out, and many of the risks facing school buildings are a result of the cost-cutting measures inherent in recent school building funding schemes. Along with drawing the main findings from the data analysis and themes when considered together, Chapter 7 will also explore the two groups of participants and how their views and experiences sit alongside each other. Through drawing together these main findings I will answer my research question and discuss the conclusions I can draw in connection with my understanding and knowledge of the field and the literature. I will also address the limitations of the research and possible avenues for further research, including the importance of including teachers as experts and important voices in sharing the experiences of their school buildings.

2 Literature Review

Does a building affect its users? The short answer is yes and the work of Foucault and Giddens and others provides a grounding for this basic assertion (Giddens, 1991b; Foucault, 1977). This will be explored further below, including in the context of healthcare settings, community neighbourhoods and religious building (Buse, Martin and Nettleton, 2018; Brenneman and Miller, 2016; Fox, 1997). The work of Actor-Network Theorists also provides a basis for understanding ways in which buildings affect and are affected by their users (Latour and Yaneva, 2017). The ability for buildings to be used to impose control through surveillance will also be examined (Piro, 2008; Bentham, 2009; Foucault, 1977). Other relevant aspects include effects on wellbeing and productivity, with an increasing interest in how work spaces and how they impact employees wellbeing, motivation and work output (Ashkanasy, Ayoko and Jehn, 2014; Vischer, 2007).

In relation to education, much of the grounding for the sociological investigation of school spaces is grounded in the above research, including how surveillance can be used for behaviour management and control of pupils, particularly building on the work of Foucault (Hope, 2013; Piro, 2008). This and other research which focuses on the effects of school buildings on the health of children and staff, particularly in light of the COVID-19 pandemic, is laid out below (Aiano et al., 2021; Abuhegazy et al., 2020; Gray and Kellas, 2020). Research has also drawn on the existing understanding that access to outdoor space and physical activity is important for wellbeing, both of children and adults (Clements-Croome, 2020; Twohig-Bennett and Jones, 2018; Plotka, 2016; White, 2014). A significant area of research into school buildings has also explored how technology and contemporary developments are entwined within school design, and how this is often not done in a user-friendly way (Woolner, Thomas and Tiplady, 2018; Woolner, 2014). Along with technology, research has addressed the need for schools to be built with the future of environmental sustainability in mind as well (Montazami, Gaterell and Nicol, 2015).

Alongside the above, the design of school buildings should be centred around education – theories and pedagogy, teaching tools, and the needs of pupils. While there is much conflicting literature and divergent theories on educational practice, some significant theories are explored below. Broadly, inclusive practice is a central tenet of many educational pedagogies and approaches. The basis for schools as communities, including the importance of inclusion and participation of all pupils, and their value for wider society is explored further below (Long, 2019; Booth and Ainscow, 2002; Dewey, 1990). More specifically, theories of education often utilise in some respect notions of challenge and

mastery, allowing pupils to be appropriately challenged in the level of their work and guided to learn and improve their skills (Tisdall, 2020; Burke, 2019; Purdon, 2016). Additionally, the importance of learning outside the classroom and beyond the bounds of the school, including through outdoor learning, play and through visits to other settings, is ever-present in educational research and is accepted as important (Mackintosh, 2017; Porter, 2017; Scoffham, 2017; Knight, 2013). Access to, and learning in, the outdoors is also particularly viewed as important for young children (White, 2014; Maynard, Waters and Clement, 2013; Williams-Siegfredson, 2012). Theories from beyond education also have strong connections, with noted psychologist Csikszentmihalyi's theory of *flow* explored further in relation to it's links with educational notions of challenge and mastery (Shernoff and Csikszentmihalyi, 2009; Csikszentmihalyi, 1990a).

Finally, the history of school buildings and institutionalised education is presented briefly. This includes the UK's history of school building funding through philanthropic means, the social importance of schools, and their architectural and spatial design (Harwood, 2015). Contemporary government school building funding schemes are presented in detail, to contextualise the research conducted and provide an understanding of the funding climate in which schools buildings currently operate (Davies, 2023; HC Deb 22 March 2022; Mahony and Hextall, 2013).

2.1 Sociology and space: Building design

When considering the effects of the school building estate, and the funding programmes and history of that estate, on pupils, teachers and others, it is necessary to understand how buildings – their design, layout, the spaces they inhabit – affect their users more broadly. There are several factors here, most notably the question of if and how a building affects its users, and in what ways buildings and spaces can be designed to impact their (potential) users. While the short answer to the question of 'does a building affect its users' is yes, there is complexity and nuance in the research in this area. In what ways and to what extent buildings affect their users are much discussed topics in sociological literature, with the work of classical sociological theorists including Giddens, Bourdieu and Foucault offering perspectives on the agency of buildings and social spaces and the extent to which their users have agency in their interactions with them (Elden and Crampton (Eds), 2007; Fogle, 2009; Giddens, 1991b; Bourdieu, 1986; Foucault, 1977). There are various discussions throughout sociological literature surrounding the design of spaces/places and the intention

behind this, ranging from surveillance (Foucault, 1977) and segregation (Gieryn, 2000) to altering or reinforcing working practices (Gieryn, 2002; Fox, 1997).

When we look at the design of school buildings, we see parallels with all types of public buildings and contemporary types of design that embody the values or priorities of the time. And beyond buildings, we see whole places (Gieryn, 2000) – streets, neighbourhoods, towns, cities – with a clear design theme running throughout which can achieve a sense of togetherness (or otherness). Nonetheless, these places are also in constant motion, being altered at great expense (financial, social) to satisfy their ever-changing users (Latour and Yaneva, 2017). It is clear that the design of buildings, and places, has many aspects beyond the aesthetic of architectural design and these facets will be explored below, with a view to understanding why current exemplar school designs are seen as such. The discussion will begin with an exploration of three broad pillars of the literature surrounding the design of buildings and places – behaviour, surveillance and productivity. These are central to many sociological discussions on place and span across continents and through decades, demonstrating their importance in considerations of building design and spatial planning.

2.1.1 Affective nature of building design

There is a significant base of literature in sociological disciplines suggesting that architecture has a substantial influence on the use of space and the behaviour of people within the space. This has been demonstrated by Actor-Network Theory (ANT) informed research – a theory first derived by French philosopher Bruno Latour (Latour, 2005). Research informed by ANT ideas has included Brenneman and Miller's exploration of the impact religious buildings have on their local environment and behaviour (2016) and more general arguments for the political and social impact of artefacts, including buildings and objects within a space (Winner, 1999). There is also work specifically around how ANT relates to, and can be employed within, architecture and design (Latour and Yaneva, 2017; Yaneva, 2009). Of key importance within ANT is how the interaction between buildings or objects (non-human actors) and people, and the agency which both humans and non-humans exert, impacts the way people behave in various ways, including physical movement, social lives and thoughts or beliefs.

Ultimately it is accepted here that spaces are mutually constitutive – those who use a space are affected by the design of that space and also affect and adapt the space. Research has shown that buildings and spaces can impact users' behaviour, emotions and

even health (Beute and de Kort, 2014; Kraftl and Adey, 2008; Fox, 1997). This can be passive or by chance, although often it is by design. Design can be utilised in normative ways, for example for positive behavioural impact such as to foster a sense of wellbeing (Martin and Roe, 2022) or reduce antisocial behaviour and crime (Welsh and Farrington, 2008), and in negative respects too. Spaces can be designed to control or limit users behaviour in more restrictive ways (Lefebvre, 1991), which is explored further below (in Chapter 2.1.2). In different types of public buildings and spaces, the way space influences behaviour and the feelings of users happens in different ways and researchers have explored a variety of public spaces and how their typical design has an impact on users (McLaughlan and Willis, 2021; Martin, Nettleton and Buse, 2019; Brenneman and Miller, 2016).

Neighbourhoods and the spaces around buildings have been shown to impact on behaviour and the use of public areas. For example, Brenneman and Miller (2016) found that the situation of religious buildings within neighbourhoods has an impact on behaviour. In particular, they found that anti-social behaviour (ASB) was reduced by the presence of a religious building, as people modify their behaviour or avoid these areas to commit ASB or criminal activity, for fear of the consequences. This can be both because of a person's religious belief, and not wanting to commit a crime near a place of religious worship, and also because of the implication that many of the users of the space will be law-abiding and so criminal activity is less likely to be permissively allowed and will more often be reported or interrupted by 'good Samaritans' (Brenneman and Miller, 2016).

Similarly, street lighting is known to have an effect on behaviour. The presence of adequate and well-maintained street lighting has an effect on perceptions of safety, and crime is lower where there is adequate street lighting (Welsh and Farrington, 2008). This can be partially attributed to surveillance – street lighting allows people to be seen and so they modify their behaviour as though they are being watched. The relationship between surveillance and spatial design is discussed in more detail below in Chapter 2.1.2. The other main theory explaining the correlation between street lighting and crime rates is related to community cohesion and informal social control. Well-maintained street lighting is a "highly visible sign of positive investment" in a local area (Welsh and Farrington, 2008, p.4). This investment, which improves the physical neighbourhood, has been shown to foster community cohesion and pride in neighbourhoods, which in turn affects the behaviour and attitudes of residents and visitors. Effectively, there is an increase in social capital, which has been shown to generally improve wellbeing for individuals and across communities, and reduce crime and deprivation (Moore and Recker, 2016; Rosenfeld, Messner and Baumer, 2001). The latter theory explains the crime reduction effect in daylight hours, whereas

surveillance alone only explains the effect overnight. Research shows a significant reduction in crime (mainly personal and property crime) at all times of day, which cannot be solely explained by increased surveillance during the hours of darkness (Welsh and Farrington, 2008), and so it is reasonable to attribute the changes to a combination of increased surveillance and community and social elements.

While the spaces around buildings have significance, buildings themselves provide the most significant areas of inhabitation. In particular, hospitals and other healthcare buildings have been explored in depth as buildings of significance in the lives of many people, including health and care workers, patients, and their relatives (Worpole, 2023; Martin and Roe, 2022; Adams et al., 2010; Curtis et al., 2007). Some particular health and care spaces have been explored, due to their unique nature in treating or caring for particular groups of people. Adams et al. (2010) found that, for young patients in a children's hospital, the design and use of the non-medical spaces could contribute to their overall sense of wellbeing. The atrium space in the children's hospital in question provided patients, and their families and other visitors, with space for socialising, escape from heavily medicalised spaces, and access to nature and natural light not available in other areas of the hospital. The children interviewed by Adams et al. were remarkably articulate in their ability to express the ways the atrium offered comfort and improved their wellbeing, alongside the commercialised nature of the space – which was also appreciated, for example having access to non-hospital food, but which was noted as being less considerate of the child-residents and users, as the commercial spaces in the atrium also included shops such as a jewellers.

Spaces designed for cancer patients, specifically Maggie's Cancer Care Centres, have also been explored by researchers (Martin, Nettleton and Buse, 2019; Butterfield and Martin, 2016). These spaces are designed with users in mind and have been shown to improve wellbeing amongst cancer patients. The researchers found that there is a strong link between the design of space and the perceptions of care and hope amongst cancer patients, visitors and staff in the Maggie's Centres (Martin and Roe, 2022; Butterfield and Martin, 2016). Similar to the findings of Adams et al. (2010), the Maggie's Centre users benefitted from access to nature, natural light and comfort, designed into the space. Although in contrast to the children hospital explored by Adams et al., Maggie's Centres are designed with an intentional homely feel, particularly in relation to the garden spaces, which researchers found had a positive impact on users' wellbeing (Butterfield and Martin, 2016).

Researchers have also explored the impact of spaces designed for care in later life, which, like Maggie's Centres, extends beyond healthcare in a medical sense, as it relates to end of life and palliative modes of care. The *Buildings in the Making* project, resulting in a

series of publications, looked extensively at the effect of the spatial design of spaces intended for care in later life (Beynon-Jones et al., 2021; Buse, Martin and Nettleton, 2018; Buse et al., 2017). As with the Maggie's Centres, researchers found that the intentions of the architects involved in designing these spaces played a significant role in how the buildings were used and received by users. However, this did not always result in the most user-friendly buildings, due to misconceptions around the perceived needs of older people and designing based on preconceptions of later life (Buse et al., 2017; Lewis, 2015). Significantly, care homes and other spaces designed for later life often lack access to outdoor space, due to limitations on space, budgets and staff time (Buse, Martin and Nettleton, 2018). This demonstrates that there are similar barriers or challenges in the design of buildings for older people and for children (i.e. schools), as in both cases there are preconceived notions of the end-users' needs and a lack of access to outdoor space (Buse, Martin and Nettleton, 2018; Buse et al., 2017; Burke and Grosvenor, 2006). However, the benefits of access to the outdoors are well established across ages, and particularly in those with dementia or facing end of life and palliative care (Buse et al., 2023; Worpole, 2023; Argyle, Dening and Bartlett, 2017). As demonstrated by Butterfield and Martin (2016), the Maggie's Centre gardens provided therapeutic space and supported those coming to terms with their diagnosis and prognosis. Further to this, researchers have found that access to nature and gardens, both at home and in residential care environments, helps people in later life to live well and particularly contributes to wellbeing for people living with dementia (Buse et al., 2023; Worpole, 2023).

Additionally, research into Maggie's Centres and care spaces for those in later life found that there was a lack of consideration for staff spaces in the design. In Maggie's Centres, staff did indicate that the thoughtful garden spaces provide respite for them from the emotional demands of their jobs (Butterfield and Martin, 2016). Whereas, in spaces for care in later life where access to outdoor space can be limited, staff are left without thoughtfully designed spaces to retreat and seek respite (Buse, Martin and Nettleton, 2018). This has an inevitable impact on staff wellbeing and reinforces the cultural notion that care staff are not highly valued despite the valuable and challenging work they do (Martin et al., 2023), and in turn this lack of wellbeing and undervaluing of these staff leads to a lower quality of care (Buse, Martin and Nettleton, 2018). Researchers have, therefore, argued that it is important for architects and those designing buildings for care to consider all the users – residents, patients, visitors and staff – in order to best meet these sometimes-competing needs and support the wellbeing of all users (Buse, Martin and Nettleton, 2018).

Whilst, as briefly explored above, many different types of buildings affect their users by different means, and to different ends, healthcare buildings offer a particular parallel with

school buildings. They contain a variety of users and are designed for users with a vulnerability or in need of care from others. There are further specific elements of behavioural change relating to space and the built environment that are of interest here, for the purpose of exploring school buildings. There is significant literature and discussion on the use of space and the built environment for surveillance and to exert control (Piro, 2008; Lefebvre, 1991; Foucault, 1977). There is also a portion of research dedicated to the relationship between the work environment, most often office spaces, and productivity and wellbeing in the workplace (Hähn, Essah and Blanusa, 2020; Ashkanasy, Ayoko and Jehn, 2014; Kamarulzaman et al., 2011; Oldham and Rotchford, 1983). These two specific areas of research will be explored below, drawing out the relevance for school buildings in particular.

2.1.2 Surveillance and control

One of the most recognisable examples of surveillance within a building's design is that of Bentham's Panopticon (Bentham, [1791] 2009). Although only conceptual, Bentham's idea was that of a perfectly designed prison being one in which there is a central watchtower with inmates housed around this tower, so they could always be watched. This concept centred on the idea of passive surveillance, in that if someone thinks they *could* be being watched at all times, it does not matter if they *are* being watched or not. This concept could enable a prison (or school) to require less manpower, as those being surveilled will self-regulate their behaviour based on the assumption that they are being watched all the time. Foucault addressed this concept in great depth and translated it to many areas of European social life and spaces (Foucault, 1977). Foucault explored the panopticon as a metaphorical, as well as literal, mechanism of exerting control over people, and his contemporary Lefebvre also drew on this concept to explore the effect spaces have on behaviour and how this is utilised to control populations (Lefebvre, 1991). The passive surveillance concept of the Panopticon has been applied to numerous modern mechanisms and technologies, including healthcare technologies and social media applications (Mackenzie and Wajcman, 1999; Prout, 1996). Further, when considered through an ANT lens, there is a co-construction of meaning and interaction between objects (or non-human actors) and people, so society acts on such technologies just as they act on us (Mackenzie and Wajcman, 1999). This can result in technologies or objects being utilised or rejected by society based on the current societal norms and values or contemporary concerns.

In relation to buildings and spatial design, the concept of passive surveillance which underlies the Panopticon can be seen in the design of many public buildings. Full height entrances/atriums and open plan stairwells, often placed centrally, offer optimal lines of sight for keeping track of those using such spaces. This type of design can be seen in public buildings ranging from the Tate Modern, Liverpool's Central Library, and London's City Hall, to schools such as the Big Creative Academy in Walthamstow and St Paul's Way in Tower Hamlets. When a new public building is commissioned, it has long been considered an opportunity to design with crime prevention in mind and this obviously leads to considerations of the role played by the building's surveillance design in discouraging criminal behaviour (Home Office, 2004; Bury Council, 2001). The design of the building and its surroundings will guide the behaviour of its users (Fox, 1997) and if there is obvious surveillance (such as CCTV) and a lack of rear entrances or dark alleys then it is likely that illicit behaviour will decrease or move elsewhere.

Surveillance can be seen as part of the design, often in indirect ways, in many modern school buildings. Generally, there is a contemporary tendency towards glass walls and large open plan stairwells and atriums in new build schools. This can be seen in the school buildings nominated for the Stirling Prize in the past twenty years (Chapman, 2016), and this design allow for pupils (and staff) to be visible at almost all times, limiting opportunities for undesirable behaviour. Private spaces are often limited to staffrooms and toilet facilities, although the design of even these spaces often lends itself to being as open plan as possible. For example, toilets are generally cubicles with open plan sink areas visible from the entrance, allowing staff to easily see any students loitering in those areas and prevent any perceived opportunities for unwanted behaviour (DfES, 2007).

In a more practical sense, the use of passive surveillance to aid behaviour management in schools is often seen as beneficial by designers and school staff, in a similar sense to the passive surveillance discussed in relation to the Panopticon (Foucault, 1977). In research carried out by Daniels et al. (2019) schools specifically reported the usefulness of open spaces for passive supervision of pupils. This can create a feeling of autonomy among pupils and limit the need for numerous staff to be 'on-duty' at breaktimes, while maintaining a certain standard of behaviour. Behaviour management in the context of schooling can be approached from various standpoints, with some suggesting that allowing pupils greater autonomy can reduce the need for active behaviour management and encourage pupils to self-govern (Biesta, 2019; Brown, 2011). For Biesta, the socialisation learnt in school is as important as the academic learning that takes place, and ultimately offering greater autonomy can "encourage children and young people to come into a responsible relationship with their freedom" (2019, p.36). Researchers have also linked a greater level of autonomy

over one's own behaviour in schools with pupils being more invested in their academic education and this autonomy and flexibility can “empower students to manage their own learning process” (O’Kelly et al., 2017, p.844). In contrast, in addition to behaviour management of those within school buildings, surveillance is often used in schools to protect against antisocial or violent behaviour from outsiders, with fencing and CCTV seen as ways to minimise the risks associated with outsiders (OECD, 2004).

Related to the way surveillance is designed into many public spaces, this ability to surveil users and outsiders lends itself to enforcing segregation. Many spaces have been designed with the purpose of excluding certain groups of people, both directly and in more subtle ways. Historically in the UK and many other countries, schools had separate entrances for boys and girls, and racial segregation in public spaces was widespread (Weisman, 1994). In the UK, while the Race Relations Act 1965 started the process of removing segregation from public life, in practice confronting racial segregation and addressing social cohesion was a much more complicated and lengthy process (Phillips, 1998). Buildings and spatial design have also been used, overtly and incidentally, to segregate and exclude disabled people (Boys, 2014; Imrie and Hall, 2001; Weisman, 1994). In different spaces this can be exclusionary – people with physical disabilities may be literally unable to gain access to a space – or act as a means of control and reinforcement of social perceptions of disability (Oliver, 2023, 2013; Imrie and Hall, 2001). For example, if access by a disabled person requires additional support (such as help from an able-bodied person to move a ramp into place), then the space recreates the notion that disabled people lack capacity or independence (Boys, 2013; Oliver, 2013).

As well as the buildings themselves, position and outdoor spaces are often designed with an element of surveillance, sometimes with the purpose of exclusion of outsiders. Culs-de-sac and residential streets, for example, often have just one or two entrances and exits ensuring outsiders can be easily seen. Some modern residential developments incorporate a central courtyard allowing Panopticon-like views from (and to) houses, particularly the case in more upmarket areas (Gieryn, 2000). These elements allow for the creation of ‘neighbourhoods’ which are not necessarily formed of a street or series of neighbours, but a more general sense of being part of one community, acting as both inclusive to those considered part of it and exclusionary to outsiders (Gieryn, 2000). These types of spaces could be seen as recreating the historically nostalgic idea of communities, where children could safely play in the street and walk to school unaccompanied (for example, the types of communities discussed by Jacobs, 1993), alleviating the fears of risk for those who are part of them, as discussed further in Chapter 0.

In a similar vein, in some American towns there is the imposition of restrictive land use zoning – by imposing heavy restrictions on land use, municipalities can prevent new homes being built, which in turn drives up rents and house prices (Trounstine, 2020). This effectively excludes those on low incomes from certain neighbourhoods (and therefore indirectly excludes based on ethnicity), creating pockets of wealth and, often, ethnic homogeneity (Trounstine, 2020). Like the community neighbourhoods described by Gieryn, this type of indirect exclusion is a direct consequence of the interplay between spatial design and related regulatory oversight to form spaces which correlate with the political landscape (Imrie and Street, 2011).

The interrelated aspects of how buildings and spatial design impact on people's behaviour and how this can be used to exert control or surveil them can have consequences for their productivity in workplace environments (Scrima et al., 2021). General aspects of wellbeing as a result of spatial design can also impact on productivity, with higher wellbeing associated with greater productivity and increased work performance (McGuire and McLaren, 2009; Vischer, 2007). These aspects are discussed in detail below, including how these factors can be extended to consideration of school buildings.

2.1.3 Productivity

There have been significant research efforts to explore the relationship between workspaces and productivity as presented by the work of Ayoko and Ashkanasy (2020), Ashkanasy, Ayoko and Jehn (2014), McGuire and McLaren (2009), and Oldham and Rotchford (1983), among others. Often this has focused on office environments, with many researchers seeking to understand how the characteristics of different office spaces affect those working within them, both in terms of productivity and wellbeing.

McGuire and Mclaren (2009) focused on call centres and staff commitment. They found that the office environment of call centre workers had a significant impact on their wellbeing, with factors ranging from lighting and ventilation to their ability to personalise their space. In turn, this impact on wellbeing influenced the workers' commitment to their jobs and their work performance. McGuire and McLaren (2009) suggested, therefore, that providing an office environment that was comfortable and met the needs of employees practically and socially would improve employee productivity and retention, ultimately benefiting the employer and employees alike. This reinforces the findings of previous research which similarly found an impact between the office environment and employee wellbeing – and,

therefore, productivity, staff turnover, *et cetera* – including the work of Oldham and Rotchford (1983). Oldham and Rotchford (1983) found that spatial proximity in the office environment had an impact on employees' relationships with their colleagues. If colleagues were forced to be too close together or felt overcrowded, this had a negative impact on their interpersonal relationships, compared with an office environment that afforded an amount of personal space and comfortable distance from colleagues. Along with other factors, they concluded that office environments had a causal effect on employee relationships and individual wellbeing, although they cautioned that more research was needed to clarify the specific impacts of the office environment on aspects including "work performance, attendance" and also "which elements of darkness… affect employees most" (Oldham and Rotchford, 1983, p.554).

Subsequent research, including that of McGuire and McLaren (2009), has furthered the conclusions that could be drawn by Oldham and Rotchford and provided additional insight into the effects of the office environment on employees. Kamarulzaman et al. (2011) found that factors including temperature, colour, noise levels, and the presence of plants all impacted on the wellbeing of employees. This is in line with research on the effects of building design more generally, including the well-established impact of nature (i.e. plants or access to the outdoors) and other factors such as ventilation (Hähn, Essah and Blanusa, 2020; Beute and de Kort, 2014). As noted by Vischer, "the environmental comfort model states that a workspace either supports the tasks and activities that are being performed there (comfort condition), or it fails to support them and in fact slows them down (uncomfortable condition and cause of stress)" (2007, p.181). This can be transposed to any workplace or education setting, with environmental comfort having a significant impact on the users of a space.

In addition to the environmental comfort model, and similar concepts around the physical workplace environment impacting wellbeing and productivity, there are many studies demonstrating the value of collaborative working spaces (Kinsman, Marris and Oakman, 2024; Bueno, Rodríguez-Baltanás and Gallego, 2018; Gerdenitsch et al., 2016). Those who work remotely or outside of a typical office environment often seek to recreate the group workplace environment, with co-working spaces becoming available in shopping centres and other public spaces, as well as some companies offering workspace solutions including dedicated co-working facilities (for example, WeWork).[1] Some research has shown there are wellbeing and productivity benefits to working in such a collaborative co-working space

[1] See https://www.wework.com/en-GB for more details.

(Kinsman, Marris and Oakman, 2024; Spinuzzi, 2012). These environments create a level of surveillance which, as explored above, can effectively modify behaviour – in this case, if those around you are working this helps to create a productive and focussed environment (Spinuzzi, 2012). This could be likened to the Panopticon, in that this type of passive surveillance can be effective at modifying behaviour even without any accountability or actual surveillance occurring. Much of the research into co-working spaces has also indicated that they offer a space for socialising and community creation for those who would otherwise work alone (Blagoev, Costas and Kärreman, 2019; Gerdenitsch et al., 2016). A large scale research project in Europe found that digital nomads (those that work remotely and choose to travel as they work) and other freelancers noted social isolation as a concern (Moniz *et al.* (Eds), 2021). In several countries and sectors explored, they found that freelancers had created social groups both to feel a sense of community and to share advice around increasing their revenue and freelance work (Moniz *et al.* (Eds), 2021). Hence, bringing factors of wellbeing and productivity together, co-working spaces can "[give] people the tools that they need to be effective in their work" and "[make] sure that they are productive", as noted by an interviewee in Spinuzzi's research who had set up a co-working space (2012, p.415).

Similarly, co-working retreats, also known as writing retreats, are becoming more commonplace, particularly amongst academics and creative writing professionals (Murray and Kempenaar, 2020; Murray and Newton, 2009). These retreats have been shown to provide spaces for focused work to take place, including, for example, the completion of manuscripts or grant applications. In the expanding research in this area, there is also evidence that such spaces can be particularly beneficial to women and authors or academics who are otherwise marginalised (Murray and Kempenaar, 2020). As with co-working spaces, there is an expectation with writing retreats that the physical space provided will be comfortable and conducive to productivity, often including support for wellbeing including scheduled breaks and time for reflection (Murray and Newton, 2009).

When considering the relationship between space and productivity in school spaces, there is significant evidence that similar concepts apply, both to pupils' learning and staff working. Research has shown the effect of various spatial elements on pupil and staff wellbeing, including lighting, sound, ventilation, and colour (Plotka, 2016). The RIBA-commissioned research reported by Plotka shows parallels with the environmental comfort model and presents ways of making school spaces pleasant in relation to environmental factors (2016). Similar to Vischer (2007), Plotka noted that comfortable school buildings impacted teacher productivity, "with the most comfortable and well-designed schools

demonstrating a 15% increase” in staff productivity, as well as improving pupil outcomes (2016, p.8).

These three aspects (the affective nature of buildings, surveillance and productivity) are all ultimately representative the ways in which the design of spaces can modify the behaviour of those using a building or space. This includes limiting who uses the space and, therefore, limiting the behaviour associated with excluded groups. The previous research in these areas demonstrates the power that spatial design can exert, both incidentally and intentionally, directly and indirectly. Spaces can be intentionally made unwelcoming, for example through being labelled as gendered, or can be incidentally exclusionary of certain groups due to implicit social barriers played out through the physical environment. Equally, spaces can be inclusive and welcoming by design, for example with accessibility built-in or through use of adequate street lighting to ensure feelings of safety. While it is accepted here that human beings have agency over their actions, there is a clear notion that buildings have a certain amount of influence on how this human agency is enacted. Approaching from this theoretical standpoint places this research alongside Lefebvre and Gieryn, with a notional alignment with ANT and the co-constructive nature of objects and people (Latour and Yaneva, 2017; Gieryn, 2002; Lefebvre, 1991).

2.2 Education and space: School building design

In relation to the design and use of school buildings, there are elements that can be drawn from the more general concepts and understanding of building design and the impact of space on behaviour, as explored above. There are particular elements of building design that are utilised specifically for institutional education purposes, for example the use of passive surveillance as behaviour management (Hope, 2022, 2013). Additionally, school building design is relevant to discussions of pedagogy, including inclusion and transformative agendas in education (Clegg and Williams, 2019; Leiringer and Cardellino, 2011; Ainscow, Booth and Dyson, 2006). In contemporary discourse around building design, factors including sustainability and participatory design also feature heavily and relate to the various pedagogic approaches adopted in education (Taylor, 2009; Woolner et al., 2007).

With growing interest in the importance of school building design carrying through to the late 20th century and beyond, some research has been undertaken to establish aspects of effective school design. Influential international organisations including The United Nations Educational, Scientific and Cultural Organisation (UNESCO) and The Organisation for

Economic Co-operation and Development (OECD) have also established divisions focused on school buildings.[2] School buildings have increasingly become viewed as important and consequential within architecture, with several schools in the UK nominated for the Stirling Prize over the last two decades and Evelyn Grace Academy and Burntwood School, both in south London, winning the prize in 2011 and 2015 respectively (Chapman, 2016). There have also been international attempts to identify exemplar school buildings and offer ideal models for design. The OECD (1996) identified several UK schools amongst their exemplary designs from across the world, with various reasons behind these choices. These included Victoria Infant School in the West Midlands, hailed for their flexible design and use of outdoor space for teaching and learning; and Methilhill Primary School in Fife, applauded for its environmental credentials and passive solar design.

Whilst the specifics of what constitutes an ideal school design vary and are still largely up for debate, there are some key factors which are now widely accepted as important considerations and will be discussed below: health (relating to ventilation and building temperature, use of space for exercise and play); technology (incorporation of modern technology into the design for both building functions and for teaching use); and environmental sustainability (both in the building's construction and its continued use). Each of these considerations has been further brought to the fore by the COVID-19 pandemic and it is inevitable that a large proportion of schools (along with other public buildings) will have spent time and money altering their spaces to be 'Covid compliant' – making space for social distancing, ensuring adequate ventilation, changing the layout or furniture in circulation spaces to ensure social distance, and other such measures.

2.2.1 Health

Several researchers and organisations have espoused the importance of health considerations in the design and development of school buildings, with the designers of school buildings factoring this in as far back as the early 1900's. Specifically, a number of factors related to health were identified by RIBA to consider when designing schools (Plotka, 2016). In the RIBA report and other research, a comfortable ambient temperature and good ventilation have been found to be important for concentration levels and to support the

[2] UNESCO's Education Sector, OECD's Programme on Educational Building (PEB) and subsequent Centre for Effective Learning Environments (CELE)

health of pupils (Mumovic, Chatzidiakou and Ahmed, 2019; Plotka, 2016). This is in line with research into the built environment more generally, including how buildings affect users' productivity and wellbeing (Kamarulzaman et al., 2011; Vischer, 2007).

Aside from the basic comfort of the indoor environment, one of the most significant health-related aspects of buildings design, including schools, is access to nature and the outdoors (Clements-Croome, 2020). Access to outdoor spaces and the natural environment has been shown to have benefits for everyone, across a variety of research. As discussed above, this includes benefits for those with dementia (Buse et al., 2023), undergoing cancer treatment (Butterfield and Martin, 2014) and in hospital environments (Adams et al., 2010). In relation to education, the importance of quality outdoor provision has been recognised since the early 20th Century in Britain. Sisters Rachel and Margaret McMillan along with another educational pioneer, Susan Isaacs, were interested in the importance of play in learning and how this could be developed in natural, outdoor environments (Giardiello, 2013). This has benefits for both physical and mental health, and for learning outcomes. The importance of access to the outdoors in educational settings was reflected in the revised Early Years Foundation Stage (EYFS) Framework documentation (DfE, 2014b; Early Education, 2014), which state that all children have the right to quality outdoor provision. Further work has also indicated the importance of quality provision being available alongside well trained and enthusiastic staff who can facilitate children's outdoor learning appropriately (Constable, 2015; Gould, 2014; White, 2014).

There is much research suggesting that outdoor learning can aid in children's development in all areas, with a particular focus on the aspects of learning through play that can be achieved outdoors and are of significant value in early education (Brock et al., 2013; Broadhead, Howard and Wood, 2010). Quality outdoor provision can provide children with the kinds of experiences and opportunities that cannot be 'failed' and therefore has been shown to help develop confidence and self-esteem (Maynard, Waters and Clement, 2013), which not only benefits learning but also wellbeing. This in turn helps children to develop the confidence to play socially, and therefore they have the opportunity to develop social skills from working and playing with other children and negotiating social situations in outdoor play. Further to this, the importance of outdoor learning has been illustrated for traditionally underachieving groups, as research has shown that these groups can thrive in an outdoor learning environment (Maynard, Waters and Clement, 2013). This may be a result of the playful nature of being outdoors and the significant opportunities to be active in their learning while outdoors, which is a significant divergence from traditional classroom-based learning (Stewart, 2011; Broadhead, Howard and Wood, 2010). Several schools have been praised

for their design incorporating outdoor spaces, including Woodlea Primary School in Hampshire which makes excellent use of the nearby environment as a learning source, with the building designed to sit into its environment and thereby provide good access to it (OECD, 1996).

Moreover, in recent years, children's health has been a growing concern among educational practitioners, medical professionals and the government, with a particular focus on obesity and mental wellbeing (Frerichs et al., 2015; Sahoo et al., 2015; Parry-Langdon, Clements and Fletcher, 2008) and the effects of the COVID-19 pandemic (Gray and Kellas, 2020). By utilising outdoor provision from the very beginning of children's school experience, they are encouraged to undertake physical activity at every opportunity and are often enthused to do so. The flexibility of the outdoor environment provides a variety of opportunities for physical activity, such as climbing trees, running, playing imaginative games, gymnastics, cycling, sport, or simply walking. This demonstrates to children that they are all capable of some form of physical activity and that this can and should be embraced (Gould, 2014; Knight, 2013). There is a well-established link between physical activity and improved physical health outcomes in later life (Chipperfield, 2008; Bath and Morgan, 1998), and exercise in childhood can have long term positive effects that improve health in later life (Gunter, Almstedt and Janz, 2012). Furthermore, studies have shown that having opportunities to experience nature can have significant and positive impacts on mental health and wellbeing and can reduce the likelihood of developing mental health problems (Bragg, Wood and Barton, 2013). Therefore, the availability of and access to outdoor space at school is hugely important given the acknowledged health benefits of being outdoors, particularly when we consider that one in eight households in the UK had no access to a private or communal garden in 2020 (Office for National Statistics, 2020).

Many of these issues came to the foreground following the outbreak of the COVID-19 pandemic in the UK in 2020. The pandemic increased general awareness of the importance of good ventilation in public buildings and it is likely going forward that school design and renovation will place a higher importance on good air circulation as a result. There has also been a drive to increase the activity levels of the general population in the wake of the pandemic, as evidence has emerged that physical fitness acts as a mitigating factor against severe illness from COVID-19 (Sallis et al., 2021). Aside from physical health, the emotional strain of the pandemic will inevitably have a lasting effect on the mental health and wellbeing of children of all ages (Wolf and Schmitz, 2024; Panchal et al., 2023; Samji et al., 2022). In relation to both physical and mental wellbeing in the wake of the pandemic, there is an increasing awareness of the need for access to outdoor spaces, particularly for those in

urban areas where outdoor spaces are limited. Several researchers have noted the lack of access to quality outdoor space that those from urban, and particularly low-income, areas faced during the various periods of school closures and social lockdowns in the UK during 2020 and 2021 (Perez et al., 2021; Gray and Kellas, 2020).

Additionally, access to ‘break-out’ spaces is also an important element of school design, allowing pupils (and staff) areas of the building to retreat to for various reasons – such as emotional distress, anxiety, stress or sensory overload (Clements-Croome, 2020). These spaces can be both indoors and outdoors, and offer emotional sanctuary, similar to that discussed in relation to Maggie’s Cancer Care Centres (Butterfield and Martin, 2016). The incorporation of break-out spaces is becoming more popular in office design, and they are also often incorporated into school designs, as they serve to improve the mental health and wellbeing of those using the building. It is likely that the fallout from the COVID-19 pandemic will support the consideration of both physical and mental wellbeing in the workplace (including schools) and thus in the building design process. The incorporation of thoughtfully designed outdoor spaces and break-out spaces, among other things, can offer considerable benefits when utilised effectively in a building’s design. They can provide access to nature, daylight and other benefits of being outdoors, and break-out sensory spaces provide calm space in times of stress and anxiety. Both outdoor spaces and indoor break-out spaces offer a quiet space for people experiencing sensory overload – for example pupils with additional needs, giving them a safe space to calm down or switch off without being interrupted or berated (Hähn, Essah and Blanusa, 2020; Parker, 2020; Matthews and Lippman, 2016).

2.2.2 The future: Technology, environmental impact and sustainability

Another significant consideration for school design is planning and designing schools for the future and for societal and technological changes. In particular, technology is in a period of significant and fast development and change, with the Third Industrial Revolution (or Information Age) representing a period of significant technological innovation from the 1940s to the 2010s (Holloway and Valentine, 2003; Fitzsimmons, 1994). Researchers have suggested that we have now gone beyond this, into a Fourth Industrial Revolution (or Imagination Age) with the innovation of technology such as artificial intelligence (AI) and virtual reality representing a distinct step beyond the Information Age (Philbeck and Davis, 2018; Schwab, 2017). Inevitably, technology is increasingly utilised as part of educational

practice, as well as being unavoidably used by children and young people throughout all aspects of their lives (Holloway and Valentine, 2003). Another key factor which often sits alongside the incorporation of new technologies, is the impact of climate change and the need for environmental sustainability. With an increasing awareness of the severe and detrimental impacts of human-driven climate change (Dunlap and Brulle, 2015), architects, school leaders, policymakers, and indeed children are increasingly concerned with designing schools which help to address the need for global environmental sustainability.

Given the plethora of technology and the rapid pace of technological innovation, it is necessary for school buildings to be designed with technology in mind. Designs that work well with the modern technologies used in the classroom are important, as they allow for integration of these technologies, such as having areas for projections and interactive whiteboards, or ICT classrooms being designed to incorporate a variety of equipment. By factoring these aspects into the design of the building itself, rather than only considering them when furnishing the building, they are better integrated into the school environment and spaces are more useable and practical (Woolner, 2014; Uline, Tschannen-Moran and Wolsey, 2009). Consulting end users is again key here, as by doing so the planned uses for different areas of the school and the specific technology and equipment that will be installed in different areas for learning and other purposes will be factored into the design (Woolner, Thomas and Tiplady, 2018). The design of school spaces, technology has been a consideration for policymakers and architects for many years. Given the rapidly changing nature of technology this can pose a challenge for architects, with a need to understand what is being used by teachers and pupils at the time of a building or refurbishment project, as well as consideration for future technological needs and developments.

Further to general technological considerations, the COVID-19 pandemic has placed a spotlight on the use of technology within education settings for the purposes of remote or hybrid learning, similar to the expansion of remote working amongst the adult population discussed above in Chapter 2.1.3. For much of 2020 and 2021, a significant portion of school pupils (and students in Higher and Further Education) in the UK and internationally have been reliant on remote learning via computer resources, videos and live stream lessons. The future of schooling in the UK is likely to include hybrid learning models – where pupils experience a combination of on-site, in-person learning and remote learning from home – as it is clear that remote learning is being used beyond the end of COVID-19 social restrictions. It has proved beneficial in some ways, allowing pupils who otherwise would miss out being able to participate more fully with their education (Almazroui, 2023; Templeton-Sprague, 2021; John, 2018). This includes those undergoing long-term medical treatment or

with disabilities that make it difficult to be physically present in the classroom environment (Almazroui, 2023; John, 2018). Remote learning and asynchronous online learning can also offer pupils access to specialty teaching that is not available at their school, for example, to provide additional language learning opportunities in schools with limited language teachers or to provide enrichment for pupils identified as gifted (Renzulli et al., 2012). Higher Education (HE) institutions are also utilising remote learning to expand the reach of their programmes and maintain student numbers in an increasingly competitive higher education market (Morris et al., 2020; Chau, 2010). This includes many traditional universities branching out to offer Massive Online Open Courses (MOOCs) – short courses of asynchronous learning, usually free or affordably priced, which are open to all and allow people to learn about something that specifically interests them or that they think will develop their skills (Baturay, 2015). Universities have also begun to offer entirely remote higher education courses including many Undergraduate and Postgraduate courses[3] – something once unique to the Open University. However, it must be acknowledged that technologies for remote and interactive learning are in support of learning in person with teachers and peers, rather than a replacement for these opportunities in most cases (Uline, Tschannen-Moran and Wolsey, 2009).

Along with the incorporation of new technology, as with all new buildings and building renovations in recent years school building designs must also be considerate of their environmental impact (Clements-Croome, 2020; Imrie and Street, 2011). The impact of climate change and the need for environmental sustainability is well established in the architectural field, and there is an increasing awareness of the severe and detrimental impacts of human-driven climate change (Clements-Croome, 2020). Architects, school leaders, policymakers, and indeed children are increasingly concerned with designing schools which help to address the need for global environmental sustainability (Tucker and Izadpanahi, 2017; Imrie and Street, 2011; Ballantyne, Connell and Fien, 2006). Building materials and methods, heating and cooling systems, and longevity are all important aspects, and some UK schools have been praised for their environmentally conscious design, including Methilhill Primary School in Fife and Woodlea Primary School in Hampshire (OECD, 1996). This is not necessarily a simple consideration though, given that school buildings are often limited to strict budgets and many technologies aimed at

[3] Online courses are now offered by most UK universities, see for example the University of York (https://www.york.ac.uk/study/online-distance-learning/), University of Manchester (https://www.manchester.ac.uk/study/online-blended-learning/) and University of Cambridge (https://www.ice.cam.ac.uk/courses/online-courses).

improving a building's environmental efficiency are costly and complex to install and operate. As with other elements of school building design, this is an aspect that requires significant collaboration with stakeholders, and a lack of collaborative design has resulted in school buildings with overly complex systems which ultimately cannot be used effectively by end users (Burman, Kimpian and Mumovic, 2018).

Whilst some historic school buildings were designed with longevity in mind and "built to last a century" (Burke and Grosvenor, 2008, p.91), their designs are now outdated, as reflected in the high maintenance costs of the UK's school buildings estate (Davies, 2023) as discussed further in Chapter 2.4. These historic school buildings are often unable to cater for contemporary educational practices and pedagogic changes. They are also environmentally costly, being difficult to heat and requiring substantial maintenance or renovation. Hence, new build schools may need to take a different approach, with designs requiring flexibility to adapt to new technologies as they arise, rather than longevity in one form (OECD, 1976).

Environmental impact and sustainability could be seen as particularly pertinent to school buildings given the recent climate protests arranged by children and young people from the UK and across the globe (Parker, 2020). Along with the COVID-19 pandemic bringing our relationship with our environment even more to the fore, environmental considerations and sustainability are certainly going to play a part in all (school) building designs in the future (Tucker and Izadpanahi, 2017; Montazami, Gaterell and Nicol, 2015).

2.3 Pedagogy

There are various pedagogic principles and theories of learning which manifest throughout the education system in UK. Whilst political changes over time have led to changing ideas of education from those in positions of authority, teachers and schools have generally had a progressive stance towards teaching and learning, generally derived from educational theorists such as Vygotsky and Piaget (Tisdall, 2020). These range from mainstream EYFS settings, heavily influenced by the importance of play and the notions of reach and touch (Burke, 2019), and collaborative learning practices in secondary and Further Education (FE), and beyond these to alternative pedagogies such as Montessori and Steiner schools (see Edmunds, 2004; Montessori, 1964). Embedded within wider pedagogies and ethos of schools are ideas of how children (and adults) learn best, what makes a good teacher (see for example Stewart, 2011; Siraj-Blatchford, 2009; Csikszentmihalyi, 1990a), and what the purpose of institutionalised education and schools is within wider society. Some of these concepts will be explored below, before going on to

examine how these relate to the physical spaces that education inhabits, and the design decisions made in relation to school buildings.

Fundamentally, schools are their own communities of people (pupils, teachers, support staff), and this early socialisation and community-building for school children relates to Dewey's position on education and schooling (Dewey, 1990). This basis for education and schooling in Britain will be elaborated below, before various theories of learning that relate to institutional education, and which teachers ascribe to or use in their teaching planning and practice, are explored. Concepts ranging from challenge and outdoor learning to the psychological notion of *flow* and it's interrelated ideas will be explored in more detail below.

The notion of challenge in educational provision is one used to describe the importance of developing children's thinking and reasoning skills, by stretching the knowledge they already possess (Smith, Cowie and Blades, 2015; Stewart, 2011; Laevers, 2000). This links closely with the intention of sustained shared thinking (SST) – the idea that children and practitioners working alongside one another to solve a problem or further an idea can help develop children's understanding and thinking (Purdon, 2016). The importance of incorporating play into activities fits into these concepts, as children need high levels of engagement in order for challenge to develop and for sustained shared thinking to be achieved (Laevers and Heylen, 2003; Laevers, 2000). These educational theories suggest that by ensuring a level of playfulness in activities, children are more likely to be highly involved and motivated, thereby allowing for thinking to become deeper and learning to be embedded (Smith, Cowie and Blades, 2015; Stewart, 2011; Broadhead, Howard and Wood, 2010).

The importance of learning outside the classroom, in various settings including on school trips or through outdoor learning, is also a cornerstone of many educational pedagogies and practices (Knight, 2013; Huggins, 2012; Beames, Higgins and Nicol, 2011). The Council for Learning Outside the Classroom (CLOtC) provides guidance and support encouraging teachers and education providers to offer learning outside the classroom, and the government's Children, Schools and Families Committee compiled a report in 2010 which highlighted the importance of learning outside the classroom (The Children, Schools and Families Committee, 2010). There is evidence across a range of ages and subject areas for the benefits of opportunities to learn outside the classroom, such as through educational visits or work experience placements (see for example, Cameron and Clappison, 2020; Waite, 2017). There is also a focus by many educationalists on high quality outdoor provision, including the importance of teachers who are confident in facilitating outdoor learning (Knight, 2013; Maynard, Waters and Clement, 2013; Huggins, 2012). The specific

approach of Forest School, developed in Scandinavia, has been partially adopted in many UK Primary schools, as part of the wider curriculum provision, as it provides a framework for this high-quality outdoor provision (Solly, 2014; Knight, 2013; Williams-Siegfredson, 2012).

In addition to pedagogical concepts and their use in education, Csikszentmihalyi's notion of a psychological state of concentration and enjoyment while undertaking an activity, which he termed *flow* (1990a), can be applied effectively to the educational context. While Csikszentmihalyi's theory has been widely considered by governments and private companies to maximise employee retention, engagement and output (Engeser, 2012), further research has spanned a wide range of activities including learning and education, sports, music, dance, and video games (including Burak, 2014; Seifert and Hedderson, 2010; Shernoff and Csikszentmihalyi, 2009). When this research is taken together, clear themes are put forward for the achievement of flow: autonomy; intrinsic motivation; and mastery. These main themes identified from *flow* literature and research relate strongly to educational theories and strategies, including challenge, SST and allowing appropriate risk-taking. Hence, flow will also be explored to further develop understanding of these educational theories and concepts.

2.3.1 Participation: Inclusion and community

Inclusive practice and ensuring successful participation of all pupils in education forms an important element of many of the educational pedagogies and approaches explored further below. It is generally acknowledged in progressive educational pedagogies that inclusion is beneficial for all pupils and wider society (Long, 2019; Booth and Ainscow, 2002; Dewey, 1990). This position is presented by many educationalists including the foundational works of John Dewey (see Dewey, Hickman and Alexander, 1998; Dewey, 1990), which significantly influenced emerging educational pedagogies (M. Williams, 2017).

In addition to learning how to read, write, count, *et cetera*, pupil participation in institutionalised education settings are also the basis for their early socialisation and community-building (Dewey, 1990). Taken a step further then, schools can be positioned as micro-societies, which are inherently tied to a wider society's values, norms, cultural and economic practices (Richmond, 1973). Richmond's (1973) proposition of 'The Micro-Society School' was for a specific model of schooling, which is utilised formally as an approach in individual schools and school groups in many parts of the world. It involves a focus on

'student-led societies' which mirror real-world societal structures.[4] While this is a relatively minor educational movement in terms of formal uptake and implementation of organised models, modern British schools encompass some of the key aspects of importance, including forms of student governance and economic control – many schools have a council of elected students, which has influence in decisions on various school matters such as food offerings, fundraising and extracurricular activities (Griebler and Nowak, 2012; Alderson, 2000). This notion of schools as communities or micro-societies within themselves demonstrates the importance of schools as places for socialisation, community-building and pupil participation, which aligns with Dewey's educational philosophy (M. Williams, 2017; Dewey, Hickman and Alexander, 1998; Dewey, 1990). However, as noted by Bragg (2021), while student voice can be effective in building a school community and encouraging participation, it must be implemented effectively to be successful and students must have the opportunity for genuine impact and for their voices to be heard.

The notion of schools as communities explicitly relates to the inclusion of all pupils within the school environment and their participation in learning and in society (Long, 2019; Booth and Ainscow, 2002). In turn, inclusion and inclusive practices within school communities links to broader inclusive culture in society and has an impact on the involvement of pupils in their wider communities (Long, 2019; Booth and Ainscow, 2002). While the tenets of inclusive practice in education can relate to Special Educational Needs and Disabilities (SEND), there are other barriers to pupils' feeling included and able to fully participate in their learning and in their school environment, including cultural factors, race, religion, and socio-economic differences (Booth and Ainscow, 2002). These factors are mirrored in wider society and thus the implementation of effective inclusive practice in schools, which Long (2019) suggests is a precursor to successful participation of all pupils, has an effect on inclusive culture in society (Booth and Ainscow, 2002).

Inclusive practice and how it relates to full participation in education for all pupils is an increasing area of research and discussion for educationalists, with current literature providing support for new teachers to implement inclusive practice (Richards and Armstrong, 2025) and specific research into effective ways of implementing inclusive practice (Giberti et al., 2025; Messiou et al., 2025). There are various key principles to inclusive education practice and the encouragement of full participation by all pupils and various approaches which can be adopted. In particular, focus on student voice and listening to children's perspectives is seen as key for ensuring effective inclusive practice (Colilles, 2023).

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[4] For more information see https://www.microsociety.org/our-model/the-microsociety-model/.

Inclusive practice can include the implementation of student voice forums, often in the form of student councils, as mentioned above, with Messiou et al. (2025) finding that student voice forums can increase pupils' feelings of inclusion and, in turn, increase levels of participation. Other research has shown how technology can be used effectively for inclusion and to increase levels of participation, with Giberti et al. (2025) demonstrating the usefulness of digital platforms to "support[] teachers' and students'… participation and inclusion in the mathematics classroom" (p.224).

The importance of inclusive practices for the successful participation of all pupils, and the links between inclusion in schools and wider communities, is clearly demonstrated (Long, 2019; Booth and Ainscow, 2002; Dewey, 1990). While there is a growing body of research explicitly demonstrating effective inclusive practice approaches (see for example Giberti et al., 2025; Messiou et al., 2025), the principles required for inclusion and full participation can be seen in other research and pedagogic approaches which do not explicitly refer to participatory approaches. Further pedagogies and approaches to learning are explored below, with common themes including those of inclusion, active engagement, and pupil-centred learning (Dewey, 1990).

2.3.2 Challenge and Sustained Shared Thinking

Developing a learning environment in which children are challenged appropriately for their stage of development is one of the key aspects of providing quality educational provision (Smith, Cowie and Blades, 2015; Stewart, 2011), as it allows for children to develop their thinking and understanding. This can be achieved in a variety of ways including through the physical resources provided, the kinds of provision areas available, the extent to which children are allowed time to delve deeper into an area or activity, and the way in which interaction and conversation is developed. The importance of this challenge has been shown in much research, with the implication that it helps children to become better thinkers and develops their cognitive abilities (Laevers, 2000; Stewart, 2011). It may also be an important aspect of enabling children to think of themselves as capable and establish the foundations of lifelong learning (Stewart, 2011). This can be linked to the importance of play and playfulness in early years (and arguably all) learning, as it encourages children to enjoy learning and become active in their own learning (Van Hoorn et al., 2014). Relating strongly with the concept of challenge and importance of play in learning is the idea of *flow* (Csikszentmihalyi, 1990a), which has been developed to suggest that if children are actively involved in, and enjoying, their learning they will be intrinsically motivated to continue and think deeply (Shernoff and Csikszentmihalyi, 2009; Shernoff et al., 2003).

Particularly in EYFS provision, the most suitable methods of developing challenge are through the resources and physical areas provided and through appropriate interaction (Stewart, 2011; Laevers and Heylen, 2003). This requires practitioners (as teachers are often referred to in EYFS) to be facilitators of learning through encouraging communication and the use of correct and varied language among children, without monopolising conversation (Constable, 2015; Stewart, 2011; Siraj-Blatchford, 2009), which is much of the theory behind SST. Further to this, it is important for practitioners to model behaviours that children should be developing, such as critical thinking skills, enthusiasm for learning and curiosity for finding meaning and understanding processes (Stewart, 2011). This is often communicated through language, with practitioners working alongside children and becoming involved in play and exploration. Through these methods, practitioners can enable children to think more deeply and develop their understanding of an idea – as they continue to think and talk, they are making meaning. Although these educational principles are often applied to EYFS, they are useful when thinking about all types of education setting and all stages of learning.

Sustained shared thinking, or SST, like appropriate challenge, is a key aspect of effective practice, particularly in the EYFS and Primary provision (Purdon, 2016; Siraj-Blatchford, 2009).There has been an increasing move towards this approach in recent years and much of the pedagogy in Primary education is now focused on the idea of teachers being aware of children's interests and working alongside them to develop skills or ideas (Constable, 2015; White, 2011; Siraj-Blatchford, 2009). Children can develop high levels of independence and critical thinking when supported by teachers who understand the unique abilities and interests of each child, adults who encourage children to think deeply and independently, and environments that enable children to sustain thinking on an activity or idea over a prolonged period (Stewart, 2011; Laevers and Heylen, 2003; Laevers, 2000).

Through understanding that children are unique and observing their skills and interests, teachers can use the concept of SST to incorporate resources and provision areas that are inclusive and create a setting which combines aspects of all children's interests and skills in order to promote learning and motivate children. Correspondingly, by having well trained practitioners/teachers who foster positive relationships with children and encourage them to work together to solve problems and develop understanding, settings can help children to develop independence and critical thinking skills as well as social skills. The collaborative and inclusive nature of SST principles offers an approach towards ensuring all children can participate in education, as simply put "participation means learning alongside others and collaborating with them in shared learning experiences" (Booth and Ainscow, 2002, p.3).

Additionally, the opportunity for children to continue with one activity, idea or skill for as long as they need is a principal aspect of SST. Allowing children to progress an idea until they have thought deeply about it and developed a thorough understanding can aid in cognitive development and encourage a positive disposition towards learning and thinking (Stewart, 2011). This is key in giving children the skills needed to become lifelong "confident, creative, motivated do-ers and thinkers" (Stewart, 2011, p.17). In turn, teaching skills of critical thinking and the ability to be motivated towards learning and thinking aligns with Deweyan educational perspectives and their benefits to wider society, offering active engagement in learning and independence to develop the skills needed for progress in society and the wider world (M. Williams, 2017; Dewey, 1990).

2.3.3 Learning Outside the Classroom: Learning outdoors and in other settings

There are many ways in which to engage children in active learning, including taking learning outside the classroom, and many educationalists and organisations support learning outside the classroom (Brookfield, 2022; Waite, 2017; Knight, 2013; Beames, Higgins and Nicol, 2011). Resources and research in this area span a range of curriculum or subject areas, including the benefits of outdoor Physical Education (PE) (S. Williams, 2017), learning outside the classroom in Geography (Scoffham, 2017), and learning outdoors across the Primary school curriculum (Porter, 2017; Waite, 2017).

Within the area of learning outside the classroom, there is a significant amount of research and evidence demonstrating the value of learning outdoors and in nature (Mackintosh, 2017; Porter, 2017; Gould, 2014; Knight 2013; Stewart, 2011). There are many ways to facilitate outdoor learning, with The Forest School Approach being one of the most significant and defined ideologies (Knight, 2013). The Forest School approach is a philosophy related to the importance of outdoor learning, with some specific ideas beyond simply having access to the outdoors. This includes children being free to explore relatively unimpeded, without adults intervening (unless absolutely necessary), an immersion in nature, developing a respect for the natural environment and being coexistent with it, and practicing appropriate risk-taking (Solly, 2014; Knight, 2013). It relates closely to ideas of challenge and SST and can offer children significant opportunities for personal development and concrete learning. It also has strong links with inclusive education and effectively facilitated Forest School sessions can encourage the participation of all pupils as it provides opportunities for self-directed and individualised learning (Booth and Ainscow, 2002). In

addition, Booth and Ainscow produced a green edition of their Index for Inclusion, which offers strong links with the Forest School philosophy and the importance of understanding the environment and sustainable practices (Booth and Ainscow, 2011).

The idea of forest school was initially an American concept, broadly speaking, with 'school forests' first introduced in Wisconsin in the 1920s (Mittermaier, 2002). The term Forest School as a particular type of formal education setting was first introduced in Europe in Scandinavian regions (Williams-Siegfredson, 2012), as it became widely thought amongst educational practitioners that learning outdoors in natural environments enabled the development of social and emotional skills, as well as the obvious aid to physical development. The importance of quality outdoor provision was also recognised in the early 20th Century in the UK, by sisters Rachel and Margaret McMillan, and Susan Isaacs, who were interested in the importance of play in learning and how this could be developed in natural, outdoor environments (Giardiello, 2013). However, the Forest School approach was not introduced in the UK until 1995, at Bridgewater College in Somerset (Knight, 2013). Eventually, it became adopted by many educational providers (including schools, nurseries and children's centres) as the benefits became widely acknowledged and health and safety concerns were appropriately addressed (Knight, 2013; Huggins, 2012). While there are resources and research supporting outdoor learning and Forest School for all ages (Knight, 2017, 2012), most outdoor learning and Forest School provision is focused on Primary School, particularly EYFS. This was reflected in the revised EYFS Framework documentation (Great Britain, 2014; Early Education, 2014), which state that all children have the right to quality outdoor provision, and many further work has indicated the importance of not only quality provision, but also well trained and enthusiastic staff who can facilitate children's outdoor learning appropriately (Constable, 2015; Gould, 2014; White, 2014).

There is much research suggesting that outdoor learning more broadly can aid in children's development in all areas, with a particular focus on the aspects of learning through play that can be achieved outdoors and are of significant value in early education (Brock et al., 2013; Broadhead et al., 2010). Quality outdoor provision can provide children with valuable experiences to help develop confidence and self-esteem (Maynard, Waters & Clement, 2013) and encourage the participation of those encountering barriers (Booth and Ainscow, 2002). Further to this, the importance of outdoor learning has been illustrated for 'underachievers', particularly boys, as research has shown they can thrive in an outdoor learning environment (Maynard, Waters & Clement, 2013). As noted in Chapter 2.2.1, the benefits of outdoor provision, particularly for underachievers and those who struggle to engage in traditional classroom environments, may be a result of the inherent playful nature

of outdoor provision and learning and increased opportunities for active learning (Broadhead et al., 2010; Stewart, 2011).

Other skills which can be developed through the Forest School approach and other high quality, well-planned outdoor provision include decision-making, appropriate risk-taking and an understanding of personal health and wellbeing (Solly, 2014; Knight, 2013). By allowing children to complete outdoor activities through trial and error, potentially getting hurt along the way – as long as appropriate health and safety measures are in place and practitioners are well trained – is an effective way of enabling children to become excellent decision-makers and showing that risk-taking can be rewarding when all factors are considered. For example, if a child wanted to climb a tree during a Forest School session, it would be important for them to learn and understand that this can be done safely, when the height of the tree, the strength of the branches and the child's own ability to climb (both up and down) are taken into account (Solly, 2014; Knight, 2013). Proponents of Forest School approach argue that this active risk-taking teaches children to consider all factors before making a decision, in order to come to the best possible decision that may lead to positive outcomes (Solly, 2014; Williams-Siegfredson, 2012). In the tree climbing example, this outcome may be the benefits of physical activity, or the view seen from higher up the tree, which may lead to further thinking about the environment.

Many of the principles of the Forest School approach, including appropriate risk-taking, challenge, and access to nature, can be seen in many educational resources and settings beyond Forest Schools (see for example Mackintosh, 2017; Scoffham, 2017; Gould, 2014). While learning outside the classroom relates strongly to learning outdoors, and approaches such as Forest School, it also incorporates a variety of other activities and opportunities including school trips or visits to museums, animal sanctuaries and art galleries; swimming, water sport and other physical education activities outside the classroom; and out of school activities or groups such as Scouts. There are also subject-specific uses of learning outside the classroom widely used in older Key Stages, including work placements (or 'work experience' as it is often referred to) which often takes place in schools in England during both Key Stages 4 and 5 and beyond into FE and HE where work placements are common elements of courses (Bullock et al., 2009).

The use of educational trips has been recommended by Ofsted (2008) and a 2010 National Foundation for Education Research (NFER) survey of teachers found that educational visits outside the classroom were valued by the majority of teachers as an effective educational tool (Cameron and Clappison, 2020). Many educational researchers have explored the benefits of educational visits outside the classroom in various subjects,

including Business (Cameron and Clappison, 2020), Geography (Brookfield, 2022), Science (Braund and Reiss, 2012), Computing (Begel and Ko, 2019) and Social Studies (Scoffham, 2017). They have found the benefits to include increased pupil engagement, developing a deeper understanding of knowledge acquired in the classroom setting, understanding practical applications of classroom acquired knowledge, and wider pastoral (social and emotional) benefits (Cameron and Clappison, 2020; Scoffham, 2017; Braund and Reiss, 2012; Ofsted, 2008).

There are also strong benefits to learning through work experience, when learners are given the opportunity to experience work-based projects or interactions in “safe, monitored environments” (Begel and Ko, 2019, p.759). Whilst work experience only takes place in Key Stage 4 and upwards (including throughout FE and HE), many of the same benefits apply as for educational visits in earlier education, including the application of knowledge in real-world environments and learning through doing (Begel and Ko, 2019; Ofsted, 2008). This type of learning through actively engaging can also offer the opportunity for participation from all learners (Booth and Ainscow, 2002). Similar to best practice research on Forest Schools, Guile and Griffiths (2001) posit that for work experience to be effective in moving a learner forward in developing their knowledge and skills, the work context and support provided much be well thought out and facilitated. Guile and Griffiths (2001) argue that “for a more productive and useful relationship between [the] formal and informal learning” (p.128) present in work experience contexts, the host workplace should explicitly provide “environments for learning” (p.126). Beyond short-term work experience placements common in Key Stages 4 and 5, work placements form the basis for apprenticeships at FE and HE level. Workplaces in apprenticeship contexts must provide learners with specified time for formal learning (off-the-job) which often takes place in a college or university classroom setting (Lee, 2012). The formality of these requirements in apprenticeships echo the ideas put forward by Guile and Griffiths (2001) when discussing work experience more broadly – in order for work experience placements, of any nature, to be a significant learning experience, learners must be supported to understand the connections between their job-based and off-the-job learning, and recognise other informal learning outcomes including the development of teamwork and interpersonal skills (Murakami et al., 2009; Little and Harvey, 2006). This is akin to the social importance of education which Dewey explores, and the micro-society model, reinforcing the importance of learning in real-world environments and the benefits of this type of learning for broader community and societal development (Dewey, 1990; Richmond, 1973).

There is a noticeable divide between the research presented above in relation to outdoor learning and learning outside the classroom setting. While many researchers and

educationalists mentioned above recognise the value of outdoor learning, and specifically the Forest School approach, there is a tendency for this to be seen as mostly relating to younger children (i.e. EYFS and Key Stage 1). Many texts espousing the benefits of outdoor learning are directed specifically at early education (Gould, 2014; Knight, 2013; Stewart, 2011), and information on how this can be integrated into Key Stages 2 and beyond, and the benefits outdoor learning can offer these older age groups, is more limited. In contrast, other types of learning outside the classroom, including where that is in the outdoors such as learning Geography 'in the field' (Brookfield, 2022), are more widely used in older Key Stages. Nonetheless, a point of importance across all types of learning outside the classroom is the need for the learning experiences to be well planned, resourced and facilitated, to ensure a valuable contribution to pupils' learning (Cameron and Clappison, 2020; Constable, 2015; Ofsted, 2008; Guile and Griffiths, 2001). The effective planning and facilitation of these learning experiences is also key to ensuring inclusion and participation of all pupils (Long, 2019; Booth and Ainscow, 2002).

2.3.4 Mastery, Autonomy and Flow Theory in Education

Mastery and autonomy are concepts which are highlighted as central to flow theory (Csikszentmihalyi, 1990a), however they are also binding principles in relation to the theories and approaches to education explored above – inclusion, challenge, sustained shared thinking, risk-taking and active learning as discussed above (Stewart, 2011; Siraj-Blatchford, 2009; Booth and Ainscow, 2002; Dewey 1990). These principles carry across both Csikszentmihalyi's notion of flow and theories of learning in many ways but can be particularly translated to areas of learning that require critical thought or individual skill such as science and music (Gyllenpalm, 2018; Custodero, 2002). There is also significant overlap in best practice for quality outdoor education provision, which is often expected to be rooted in play and offer appropriate risk-taking and autonomy for pupils (Solly, 2014), allowing them to be deeply invested in their learning and skill acquisition (Shernoff and Csikszentmihalyi, 2009; Block, 1984). The use of flow theory more broadly in an educational context has been explored by researchers including Csikszentmihalyi himself, with "concentration, enjoyment and interest in learning activities" used as measures of flow for pupils (Shernoff and Csikszentmihalyi, 2009, p.133). Findings from much of this body of research have found that traditional classroom environments may engender concentration but lack opportunities for pupils to engage and actively participate thereby finding enjoyment (Shernoff et al., 2003; Csikszentmihalyi and Larson, 1984). Nonetheless, it is possible for traditional classroom and

school environments to offer pupils the opportunity for mastery and a balance between skill level and challenge, and the possibility of the learning that can be achieved when in a state of flow (Ellwood and Abrams, 2018; Stormoen et al., 2016). This can be related to the importance of inclusive practice to encourage pupil participation, as with effective strategies in place it is possible to engage all pupils, for example demonstrated by the research of Giberti et al. in the maths classroom (2025).

The concepts of challenge and SST, and the ways in which they relate to learning outside the classroom and in the outdoors, including the Forest School approach, are mirrored in the underlying principles of the concept of *flow*. Much of the research on flow has focused on activities that are participated in voluntarily. The “autotelic experience” of such activities is related to their voluntary nature and participation is not controlled by external forces (Delle Fave, Bassi and Massimini, 2003, p.94). Although this is often not possible within education settings, it is often a feature of Forest School approaches, and children are offered the opportunity to choose where and what they want to do within the space (Solly, 2014; Knight, 2013). An example of such an activity outside of the school environment is rock climbing, which has been a source of interest for several researchers including Delle Fave, Bassi and Massimini (2003) and Csikszentmihalyi (1975). These works found that skills and challenges were the key to entering a state of flow – the level of skill required to succeed must be reasonable for the participant, but there must also be an appropriate level of challenge. In such an autonomous activity, climbers are responsible for posing their own challenges and so must fully understand their own level of skill. If these elements are pitched too low or too high (the activity is too easy or too difficult) then flow is not achievable, because the participant is either bored or does not believe they can succeed and so motivation to concentrate on the activity is limited. Rock climbing provides a useful example for gauging this balance between skill level and challenge, because the consequence of the challenge being too difficult is the potential for injury. Given that generally climbers can be considered risk averse (insofar as they do not want to sustain serious injury) this goes some way to demonstrate the great importance of appropriate challenge, as climbers are driven to improve and challenge themselves, but “they also reported they did not want to put their lives in danger by going beyond personal capabilities” (Delle Fave, Bassi and Massimini, 2003, p.94).

Similarly, with skateboarding participants are responsible for defining their own challenges, and so to enter a state of flow they must understand their current level of skill and gauge how much they are capable of reasonably pushing themselves (Seifert and Hedderson, 2010). Although this does not mean that there is not frustration and failure

simultaneously to a state of flow in addressing the challenge. In Seifert and Hedderson's research, they witnessed "occasions when skateboarders would curse… in frustration at a lack of progress" but they would rarely abandon the challenge they had set themselves (2010, p.284). Seifert and Hedderson suggest this persistence demonstrates a "sense of agency" (2010, p.284) – because the skateboarders take on the activity willingly and voluntarily, they are in control of the experience and so can persist where they may not in a forced situation (such as the classroom). As Steels puts it "self-control of the challenge level is one of the absolute prerequisites for reaching a flow experience" (2004, p.11). Whilst this is inherently the case in voluntary sporting activities it is not always clear in other activities particularly educational settings, which shows one of the benefits of the inclusion of quality outdoor provision, other opportunities for learning outside the classroom and inclusive education practice, as approaches that can facilitate such autonomous control of challenge and development for pupils.

While in a school context there can be difficulties in incorporating opportunities for autonomy and the associated benefits to learning within compulsory education – compared with non-school activities like rock climbing and skateboarding – researchers have found that the intrinsic motivation gained from autonomy over the activity and level of challenge can also be gained from compulsory activities (Stormoen et al., 2016). Stormoen et al. suggest that due to the altered expectations in compulsory schooling, pupils can gain intrinsic rewards from activities that they know they have to complete (2016). In fact, an activity can be both forced and intrinsically motivated and so does not have to be totally autonomous for flow to be achieved. In Csikszentmihalyi's work on literacy education (1990b), he posits that intrinsic motivation can begin with extrinsic motivation – for example with children in a classroom being told to read, but then an enjoyment of reading may develop in the right circumstances and so going forward they continue to read for the intrinsic reward of doing so. The key to such activities offering the possibility for intrinsic reward could be equated with effective facilitation by teachers, to ensure pupils are able to participate fully and overcome any barriers to engaging with their learning (as per research on effective inclusive practices, such as Long 2019).

An overriding requirement of achieving flow can be seen as the possibility for skill improvement, or mastery. In sporting activities, for example, this is demonstrated by the continuous strive for improvement through goal orientation and achieving challenging goals which can be seen in the work of Seifert and Hedderson (2010) and Csikszentmihalyi (1975). In the school setting, it is possible for pupils to develop a sense of intrinsic motivation and autonomy within a compulsory activity if the level of challenge offers them the opportunity for improvement (Ellwood and Abrams, 2018; Custodero, 2002). However, as is

central to educational notions of challenge, the level of difficulty must not be excessive so as to be demotivating – if something is too difficult it does not seem achievable and so it is not possible to enter a state of flow (Ellwood and Abrams, 2018). This is consistent with inclusive approaches to education and the encouragement of participation of all pupils, as activities which were much to difficult for some pupils would present a barrier to their participation (Booth and Ainscow, 2002). The idea is not to always perform comfortably within one's skill level, but to address a challenge at the top end of this level, so the challenge is achievable but requires deep concentration and effort, thus developing skills further. Ellwood and Abrams (2018) demonstrated the importance of this balance and strive for improvement in achieving a state of flow in their work with groups of school pupils undertaking a science experiment. The two groups began by experiencing flow at relatively similar levels throughout the learning process, but when they designed and undertook their own project, one group was able to achieve flow much more frequently, in part because they designed a project that was challenging for them and required significant thought and problem-solving. Their success in completing the project demonstrated the level of challenge was appropriate and as a result they "maintained their enthusiasm throughout" (Ellwood and Abrams, 2018, p.417). This contrasted with their counterparts of a similar academic level, who "developed a research question that was well within their cognitive abilities" and quickly began to get bored of the project (Ellwood and Abrams, 2018, p.414).

With relation to the theories of education and related notions presented above, the broader connections between spatial design and pedagogy, including pupil engagement and effective teaching and learning, are explored below.

2.3.5 Pedagogy and Space

There is significant evidence that the design of school and educational spaces has an effect of the engagement of pupils (not just their achievement outcomes) and the practice of teachers (Biesta, 2019; Plotka, 2016; Gislason, 2009; Kraftl and Adey, 2008). This relates to aspects of accessibility and teaching pedagogies and theories of learning, including inclusive education practices, SST and flow theory. Some authors have indirectly used elements of flow within their research into education settings (Gislason, 2009). While many researchers have explored traditional and alternative education settings, and often found alternative pedagogies such as Montessori offering greater levels of motivation, challenge and flow in pupils (Rathunde and Csikszentmihalyi, 2005; Whalen and Csikszentmihalyi, 1991), little consideration has yet been given to how the buildings contribute to this. Rather, the focus

has been on how the pedagogy and classroom environment as whole impacts pupil engagement. Given the extent to which built environments have been shown to affect people's behaviour and use of space, as discussed above (Brenneman and Miller, 2016; Butterfield and Martin, 2016; Winner, 1999), it seems this should be investigated further with specific relation to educational settings.

Whilst we know about designing buildings for physical efficiencies, designing them for efficiencies of learning and to maximise opportunities for participation is quite different and there has been little research in this particular area (Harrison and Hutton, 2014). Where this research has been carried out, much of the focus is on the use of Information and Communication Technology (ICT) including government commissioned reports (Building Futures, 2004; DfES, 2003). This drive towards incorporating modern technology into school design is based on the premise that ICT enhances learning and teaching methods, although it may be that this has been focussed on too heavily – Boys (2011) notes that although the higher education campus is filled with modern ICT, often little use is made of it in favour of paper and discussion based methods on both the part of teachers and students. However, as demonstrated by Giberti et al. (2025), when used purposefully, technology can enhance participation in learning significantly.

However, by utilising research into the built environment of schools, it can be inferred that there are aspects that would encourage learning and states of flow beyond the use of technology, or more often environments that inhibit it, with researchers frequently describing over stimulating and disruptive environments as barriers to pupils' engagement and concentration. Lewinski (2015) discusses how adequate temperature controls and heat distribution are necessary to allow high levels of concentration, as well as minimising noise disruption created by the design of the space. However, there have been successful uses of open plan space and Gislason (2009) found that pupils would self-regulate their noise levels to avoid causing disruption, showing their high levels of motivation and concentration on their learning activities, although he noted that this did not entirely mitigate the effects of noise bleed between sessions.

In addition to environmental control factors within building design (for example, heating, lighting and noise), there is also evidence that the layout of the space affects the motivation of pupils. This includes table and chair layouts that are conducive to group work and the incorporation of flexible spaces that are open plan or allow for easy transition between activities and are often used in a way that allows pupils more freedom in their activities giving them more autonomy in their learning, both noted as features of the School for Environment Studies examined by Gislason (2009). Gislason also commends the school for

their use of outdoor space in connecting classroom-based learning with practice and skill enhancement, which contribute to mastery – this is made possible through the innovative design of the learning space in this example. This innovative design of space to connect classroom-based learning with practice is indicative of the benefits of learning outside the classroom and in real-world environments (Brookfield, 2022; Cameron and Clappison, 2020; Porter, 2017; Scoffham, 2017).

It must also be considered that the design of school buildings affects the way in which teachers practice and the possibilities for different pedagogies to be utilised, which in turn has been shown to affect the levels of engagement achieved by pupils. In a practical sense, for example, if a school does not have adequate outdoor space or access to it (such as access to space for Forest School or similar outdoor learning), then outdoor provision cannot form a central part of the curriculum. Regardless of staff ethos or pedagogic ideals, if they do not have access to space for outdoor provision then they cannot provide that provision. Teachers can find creative ways to incorporate aspects such as outdoor learning and learning outside the classroom without dedicated and adequate in-school spaces, such as those described by Scoffham (2017) and Mackintosh (2017) who discuss different ways of utilising locally available outdoor spaces for learning – respectively ‘streetwork’, exploring streets and buildings, and beaches and coastal areas. Nonetheless, the ability for teachers to embed pedagogic practices such as learning outside the classroom into their everyday practice is inevitably impeded by lack of access or thoughtful design in the school setting (Ernst, 2013). Simply put, a teacher in a school with a dedicated outdoor area designed for Forest School activities will have an easier job of incorporating outdoor learning and Forest School principles into their regular teaching than a teacher in an urban school with only paved outdoor space. This is a particular barrier in urban areas, where space is at a premium and therefore access to outdoor spaces is limited, which was raised as a particular problem during the COVID19 pandemic (Perez et al., 2021; Gray and Kellas, 2020).

Combining environmental factors, learning goals and teaching practices, Lewinski (2015) explores the benefits of an environment that encourages telic motivation (goal-oriented) rather than paratelic (activity-oriented) – in this context that relates to mastery as a goal rather than learning to pass a test. It is demonstrated that the combination of seating arrangements and environmental controls as well as teacher methods encourage telic motivation and therefore states of flow can be achieved. This is interlinked with appropriate levels of stimulation from the environment, which several researchers have examined (Barrett et al., 2015; Tanner, 2000; Wright and Cowen, 1982), with the typical conclusion being that stimulation of the environment has a curvilinear effect on pupil engagement and levels of concentration (Barrett et al., 2015). Thus, a moderate level of colour and design

interest should be present without overuse of vibrant colours and elaborate design in order to encourage high levels of focus and the possibility for flow to occur.

Along with this evidence, it must be acknowledged that research in this area often contains the caveat that the design of learning spaces is not a one size fits all approach. Gislason (2009) grants that the School for Environment Studies is designed for the particular learning that occurs there and would likely not work in many other types of education setting or for other subject focusses. For example, teachers would struggle to facilitate learning and pupils would struggle to reach states of flow in a painting activity if it were taking place in a computer classroom, as the physical setting is entirely inappropriate. Several authors have also raised concerns that different types of school design may suit different pupils and that there may be particular disadvantages of more innovative and open spaces for pupils with significant concentration or behavioural issues, as even slightly raised levels of noise or other stimulation could be disruptive for them (Barrett et al., 2015; Wright and Cowen, 1982). Hence, there is a clear need for school spaces to be designed in a thoughtful way, based on the likely activities taking place in them and the pupils educated there – but when this is taken into account, there are distinct benefits in terms of the factors discussed above that would encourage pupils to achieve states of flow in their learning activities and make progress in their learning as a result.

While significant aspects of research in the fields of education, sociology and building design have been explored, this research specifically relates to school building design in the UK. The history school building in the UK, and the funding behind it, is detailed below, including political and cultural contexts which have afforded changes through the years. There is detailed exploration of contemporary, post-millennial government building schemes and practices, setting the scene for many of the types of school buildings which participants go on to discuss in the research.

2.4 School Buildings: UK history and context

Early school design across the UK involved wealthy private benefactors enlisting the services of renowned architects such as Sir Christopher Wren (see Sir John Moore School in Appleby Magna, Leicestershire). Many of these historically significant buildings survive today in the form of commercial or community ventures, for example art galleries and museums (Harwood, 2015). Fast forward three-hundred years, the sheer scale of the school buildings estate in UK, providing schooling for some 8.89 million children (DfE, 2020), has required vast government investment and with an extra ten million pupils expected to be in school in ten years there is no doubt that the UK’s schools buildings estate needs to be dramatically

expanded and improved upon (Tariq, 2020). The continued debate, however, is how the design of school buildings impacts their users and what, if any, design features offer the best learning environment, with ideas around best-practice in education and pedagogy evolving over time in line with the educational theories explored above. With recent government school building programmes drawing criticism and providing insufficient funding (Tariq, 2020; Plotka, 2016; Mahony and Hextall, 2013; Hatcher and Jones, 2011), the problem of providing enough satisfactory, let alone high quality, school places for the growing student population is an imminent one.

Looking back at school buildings and their construction through history we see a move from private funders to government funding and oversight; from boarding schools, to day-oriented; from being for a privileged few to a compulsory part of childhood; from grand architectural spaces to basic, simple buildings built on tight government budgets. There have been many designs and proposed ideal school buildings over the years, as well as substantial changes in educational pedagogy, which influences and is influenced by the design of the buildings in which education takes place (Darian-Smith and Willis, 2016; den Besten et al., 2011). In England, school design has drawn influence from a variety of sources, from America to Germany to Scandinavia, and successive governments have introduced (and scrapped) school building programmes, with various aims and outcomes that will be explored briefly here (Burke and Grosvenor, 2008). These range from new buildings with contemporary design, renovation and essential maintenance of existing school buildings, and repurposing other buildings to become schools. By and large, the recurrent issues faced are keeping pace with increasing pupil numbers and declining condition of existing stock (Davies, 2023; Plotka, 2016).

2.4.1 History

During the industrial revolution, given society's increasing demand for institutionally provided basic education, the UK government became increasingly involved in the building of schools, from funding through to design and oversight, ultimately becoming the main funder of school buildings in the country (Harwood, 2015). The 1870 Elementary Education Act provided the first piece of legislation on school provision in Britain, paving the way for greater regulation of schooling (Power, 2021). Schools at this time often centred around one or two large rooms, with curtain dividers allowing versatile use of space, although there were moves to adopt more progressive approaches, with the London School Board being the first to attempt a central hall and classroom structure, taking features from the German style of schooling (Harwood, 2015). In the early twentieth century, health became a greater focus in schools and medical inspections began to ensure adequate ventilation and areas for play.

School meals were also introduced at this time, championed by progressive educationalist Margaret McMillan (Steedman, 1990). There was a sharp rise in the building of secondary schools, expanding the basic provision of schooling beyond the age of fourteen, and with this increasing estate of buildings, architecture practices began specialising in school design, with the Queen Anne style particularly popular at this time, with the sash windows and red brick associated with many 17th and 18th century houses in the South of England (Harwood, 2015).

Moving to the inter-war years, England transitioned to a two-tier system of education – primary and secondary – and there were increasing numbers of alternative pedagogies emerging, including Montessori and Steiner schools. Maria Montessori's book was first translated into English from Italian in 1912 and provided the basis for a new way of approaching early years education (Montessori, 1964), focusing on the independence and natural curiosity of children. The first Steiner school was established in London in 1925 (Michael Hall School, now in Sussex), with its ideologies found in Waldorf (or Steiner) education aiming to teach children in a holistic way and valuing all forms of intellect – academic, artistic, and practical (Edmunds, 2004). This period also saw the first use of prefabricated construction for school buildings, with architects searching for cheaper and more flexible alternatives (Burke and Grosvenor, 2008). This prefabricated approach became increasingly popular and was adopted by the likes of renowned educational architect Mary Medd, who worked as a public buildings' architect for much of the 20th century and was involved in designs including the now listed Burleigh Primary School in Cheshunt. Medd made a name for herself through her collaborative approach to design and her particular focus on the importance of school buildings being designed with consideration for both pupils and teachers (Burke, 2013). A more modern style was adopted for science and technology blocks, acknowledging that different subjects demand different types of spaces for effective teaching and learning (Harwood, 2015). In 1944, The Education Act of 1944 brought in the tripartite system of schooling, introducing the need for separate school buildings for Grammar, Secondary Modern and Technical schooling (Harwood, 2015).

The subsequent post-war years came with tight budget controls and a shortfall in early years places due to the baby boomer generation. Prefabricated systems became more widely used for schools due to their cost-effectiveness and more open plan Scandinavian-influenced design was adopted. However, there were difficulties enacting educational reform in practice, due to schools that had been "built to last a century" and were not easily adapted for contemporary pedagogy and teaching practice (Burke and Grosvenor, 2008, p.91). Despite this, there were significant drivers of educational reform, with more alternative

pedagogies emerging – including Reggio Emilia in post-war Italy, with its student-centred ethos and focus on learning through exploration (Aljabreen, 2020) – and much of Europe heralding education as a way of preventing the rise of fascism in the future (Smidt, 2013; Burke and Grosvenor, 2008). For the first time, and possibly as a result of the increased importance placed on education and pedagogy, architects began consulting with teachers more readily, to better understand the practical aspects of teaching and the needs of the classroom, particularly driven by architects like Mary Medd (Burke, 2013).

2.4.2 Contemporary Government School Building Programmes

Building Schools for the Future

With all the above considerations in mind, post-millennial UK government school building programmes can be evaluated with a view to improvements for the future of the UK's school buildings. The two major school building programmes of the last twenty years have been polar opposites in terms of their stated aims and political motivations. New Labour's flagship policy, Building Schools for the Future (BSF), announced in 2004 and running from 2005–2010, with schools delivered until 2012, was designed to transform schooling by renovating or rebuilding the entire English secondary school estate. With intentions to affect pedagogies and have a lasting impact on teaching and learning, this policy also aimed to utilise the school estate to benefit whole communities with its transformative agenda (Woolner, 2010). Schools were conceived as "a centrally-valued community resource" with uses for the whole community including adults without children (DfES, 2006, p.80).

Following government commissioned research which reinforced the minor positive impact of investment in school buildings (PwC, 2001), the programme was intended to provide funding to overhaul the entire secondary school estate in the UK, through rebuilding, renovating, and incorporating ICT into all schools (Burr, 2009). The design for these new buildings and renovations was to include considerations of the learning and teaching environment, healthy lifestyles, encouraging positive behaviour, community uses, and sustainability and environmental impact (DfES, 2006). The echoes of Keynesian economic theory, government spending on the economy and community development in order to drive development and ultimately build the economy, underpin the BSF programme and it was largely well received by teaching professionals (Mahony, Hextall and Richardson, 2011).

However, subsequent research has shown problems with how BSF was implemented, with overly complex designs and systems limiting effectiveness and rendering some schools not fit for purpose (Burman, Kimpian and Mumovic, 2018), reflecting a lack of consultation with end users (Tse et al., 2015). The National Audit Office also reviewed the policy and found a lack of clear aims and criticised the Department for Education for "not [explaining] what success looks like" (Burr, 2009, p.5). In addition, similar programmes in other countries, including Portugal's Secondary School Modernisation Programme in 2007, did not have their desired effect of encouraging new pedagogic approaches and transforming the education system (Veloso, Marques and Duarte, 2014). Hence, whilst largely well received by teaching professionals, these types of wide-reaching programmes with ambitious aims for social change may have proved overoptimistic (Mahony and Hextall, 2013; Mahony, Hextall and Richardson, 2011).

Priority School Buildings Programme

After abolishing BSF in 2011 following a review of the programme (James, 2011), the majority Conservative coalition government took a different approach to their school building programme. The Priority School Building Programme (PSBP) was introduced in the context of an economic recession with a significant aim of lowering public spending and reducing the country's deficit (Tse et al., 2015). The programme was directed at the most dilapidated school buildings and the most disadvantaged areas of the country, rather than a country-wide agenda of transforming all schools. It was the most cost-effective school building programme to date per metre-squared, with an initial allocation of £4.4 billion for the two rounds (Education and Skills Funding Agency, 2017). However, because BSF was abolished and around 700 of those projects were cancelled mid-way through, the new PSBP programme received three times as many applicants as expected and there was a significant shortfall in funding (Tse et al., 2015; Hatcher and Jones, 2011).

Major criticisms of PSBP came in a RIBA commissioned report on the programme, centring around it's "one-size-fits-all approach" with "opportunities to innovate or respond to context" not taken (Plotka, 2016, p.7). The report identified several areas of improvement for the continuing programme with the hopes that subsequent funding would be used more effectively. These recommendations included better *information flow* between the Education Funding Agency and stakeholders; *flexibility* in the approach to design, but with clear baseline standards; and a *smarter approach* to building management, with greater

consideration for ease of use and real-world environmental efficiency (Plotka, 2016, pp.37–53). In 2020, the Conservative government announced additional funding for school buildings, on top of the expected allocation for PSBP which was due to run until 2021. This funding ran its course, fulfilling two rounds of applications (in 2014 and 2015) with a total of 537 schools allocated funding, with all works originally due to be completed by the end of 2021. However, as of March 2024, there were projects ongoing in the second Phase of PSBP, with contracts for works awarded for all but one school (HC Deb 13 March 2024). In 2023, the DfE expected all projects to be completed by 2025, with delays largely attributed to the COVID-19 pandemic (Davies, 2023).

School Rebuilding Programme

Following the end of new funding though the Priority School Buildings Programme, the new School Rebuilding Programme (SRP) became the funding programme for substantive school building projects in England from 2021 (DfE, 2024a). This programme is similar to its predecessor in its focus on prioritising schools in the worst condition, although the level and urgency of need required to secure funding is higher. School buildings have been prioritised according to their condition, with schools applying for funding through several rounds, and those subsequently assessed as having the most need being allocated funding for substantial rebuilding or refurbishment (DfE, 2024a).

As noted in Long and Danechi's research briefing (2023) on school buildings and capital funding in England, the first set of schools which had been successful in acquiring funding through this new model were announced in February 2021. Following this, further schools were allocated funding through the programme, totalling 400 schools by December 2022. The SRP was designed to provide funding for 500 schools, leaving 100 schools yet to be selected. The allocations for this programme were based on schools with the highest need, meeting certain criteria including having construction types that need replacing; having buildings in a severe and urgent condition; and/or having buildings that posed significant risk of harm to pupils or staff (DfE, 2024a). In addition, the DfE assessed the condition of England's schools through a Condition Data Collection (CDC) assessment and prioritised based on this and additional data collected. A total of 22,031 schools were part of the CDC (DfE, 2021), from which the first 100 schools to be given funding under the SRP were prioritised. After this, schools had to actively apply to be considered for funding (Davies, 2023). The DfE released data on the methodology it used to determine priority of the first 50

schools allocated funding (DfE, 2024c). This included those with Laingspan or Integrid buildings and those identified as in the poorest condition by the CDC (DfE, 2024c). Laingspan and Integrid were types of modular building systems used in the post-war period which were deemed to be nearing the end of their life and could have structural integrity issues if their advised lifespan was exceeded (DfE, 2024c). The DfE also chose to prioritise two Special Educational Needs schools and one Alternative Provision school in the first round, roughly representative of their proportion of the whole school estate.

This newest government school building programme has faced significant criticism, largely due to the strict criteria under which funding was allocated and the limited number of schools which successfully secured funding (HC Deb 22 March 2022). There are specific examples of schools unable to secure funding through the scheme due to not being of a high enough priority after the CDC, which have serious problems including leaking roofs, lack of heating, and other potentially hazardous issues, partly due to schools with RAAC being given last-minute priority for funding (Shearing, Wainwright and Standley, 2024). The implication of this based on available information and analyses of the state of school buildings is that there are so many schools in seriously poor condition in the UK school estate that even some of those with substantial and dangerous structural defects do not necessarily meet the threshold for SRP funding (Davies, 2023; Mitchell, 2023; The Construction Index, 2023).

There has been little thorough critical analysis of the SRP, as it has not been running for long and had only completed one project, as of March 2023 (Davies, 2023). However, media reports indicate there is a significant amount of discontent and frustration amongst educational professionals, school leaders and related unions around the scarcity of this funding and the severely high level of need required for this funding to be awarded (Shearing, 2024c; Shearing, Wainwright and Standley, 2024; Evans, 2023). A National Audit Office (NAO) report (Davies, 2023) also condemned the Conservative government's record on school building funding, concluding that funding for school buildings has not matched the amount needed in recent years. The NAO report also found that 38% of the total school buildings estate are beyond their estimated lifespan, which is contributing to the high levels of maintenance required (Davies, 2023). The report also found that 700,000 pupils were learning in school buildings that the DfE had identified as needing major rebuilding or refurbishment, and the DfE "considers that poor-quality school buildings have a negative impact on several important measures, including pupil attainment levels and teacher retention" (Davies, 2023, p.7).

Other types of school building funding

Running in parallel to the above UK central government funding programmes, which have formed the substantive funding allocation for school rebuilding and renovation projects since the turn of the millennium, there are smaller funding schemes available which schools can apply to for additional maintenance funding and small-scale projects. The most significant of these is the Basic Need Funding, which is allocated by Local Authorities (LAs) (Long and Danechi, 2023). This funding stream is designed to allow LAs to meet their legal obligations to provide enough school spaces for the children in the area, and so it is the source of funding used for many school expansions or the creation of new schools when an increased demand for school places is the driving factor.

The other main funding stream comes from the School Condition Funding which is administered by central government (Long and Danechi, 2023). And is designed to maintain the condition of the school estate. This includes three separate pots: Devolved Formula Capital (DFC), which is a proportional amount allocated to all schools and which can be used at their discretion; School Condition Allocations (SCA), which is distributed to organisations responsible for large numbers of schools including LAs and large multi-academy trusts and can be used at their discretion across their school estate; and the Condition Improvement Fund (CIF) which is the equivalent funding for smaller schools not eligible for SCA, and which must be applied for by schools for specific projects.

In addition, in 2023 the government announced details of a specific funding stream to deal with the renovation required in schools which contain Reinforced Autoclaved Aerated Concrete (RAAC). There is not a specific funding stream for the removal of RAAC and subsequent necessary works, but the government has stated that all the capital funding schools need for this, including remedial work, will be provided (DfE, 2023, pp.24–25). The NAO report was critical of the government messaging around support for schools with RAAC, and recommended that they should “determine by when, and through what means, it plans to have fully dealt with RAAC as a safety issue across the school estate so that it is no longer a critical risk” (Davies, 2023, p.11).

As established above, school buildings in the UK are important, in a societal and educational sense. These spaces impact the learning of young people, the work of teachers and other staff, and indeed can impact the communities around them. Further, there is significant evidence that the school buildings estate is generally in need of maintenance and

updating in order to provide adequate schooling for the ten million pupils expected to be in need of school places in the next ten years (Tariq, 2020). This needs to be adequate both in term of the number of spaces available and the quality of the spaces – particularly given that the UK positions itself as a world-leader in education. The research which has been carried and is presented in the following chapters seeks to address some of the knowledge gap in relation to school building design and use, which is an important are for research focus.

3 Methodology

This research was approached from a qualitative, interpretive perspective, with an overarching pragmatic approach employed (Creswell, 2014; Morgan, 2014) to best explore the broad research aims – to explore what architects and teachers want from their school buildings and understand how the design of these buildings balances with the lived experiences of teachers. The research was adapted for the context of the COVID-19 pandemic and associated restrictions, which resulted in the practical decision not to include children in this study. The views of key adult stakeholders (architects and teachers) were investigated in an exploratory way. Architects and teachers (and other school staff) were interviewed in a semi-structured interview approach, with adaptations including virtual interviews due to COVID-19 restrictions. A creative approach was taken to virtual interviews, which allowed for the sharing of images and broadening of discussions, as discussed further in Section 3.2. Sampling and recruitment overlapped significantly with interviewing, with architect interviews completed before teacher interviews in order to provide contextualising information on the school design process. My position as simultaneously an outsider (to the field of architecture) and an insider (to the field of teaching and education) gave the research a unique frame of reference and allowed for particularly strong rapport to be built with teachers, while architects were approached as providing expert knowledge to ground the data. Following interviews and collection of secondary visual data (images, planning documents) and public domain information (including Building Bulletins and news reports), thematic analysis was carried out using NVivo as an organisational tool. While the research had some limitations related to sample size and necessary COVID-19 mitigations, these have not overly impacted the data collection, and the data collected was rich and valuable.

3.1 Research Paradigm

The research as a whole is being approached from a pragmatic viewpoint, as derived from John Dewey's philosophy (Dewey, Hickman and Alexander, 1998). This Deweyan pragmatism "is a kind of realism" (Garrison, 1994, p.5), with the formation of knowledge being context specific and inherently related to the environment and the experiences of those forming knowledge (Morgan, 2014; Hammond, 2013). This approach is increasingly acknowledged as a legitimate way of framing scientific inquiry and an alternative to the post-

positivist or constructivist paradigms for social research, with Morgan stating that "pragmatism acts as a new paradigm" (2014, p.1049). This approach is also well-aligned with research in the fields of both education and architecture, with Dewey writing extensively on education (Dewey, Hickman and Alexander, 1998) and many current researchers positing the usefulness of a pragmatic approach in education (Hammond, 2013; Biesta and Burbules, 2003) and architecture (Guy and Moore, 2007).

This is an established approach within the fields of Sociology and Education research (Morgan, 2014; Hammond, 2013; Biesta and Burbules, 2003; Garrison, 1994), and is consistent with the research aims laid out in Chapter 1.3, specifically to understand the lived experiences of participants. More generally, placing the participants at the centre of the research is an established mode of sociological enquiry, particularly in relation to feminist research and research with women (for example see Oakley, 2018, 2005; Letherby, 2003). While this research is not approached from a feminist standpoint, it was expected that a significant portion of the teaching participants would be women, given the notable fact that teaching is a stereotypically gendered profession (Han, Borgonovi and Guerriero, 2020; Kelleher et al., 2011) – 75% of the UK's teachers are women as of 2024 (DfE, 2024b).

This paradigmatic framework allows for the research methods to be designed in order to best answer the research question (Creswell, 2014). In line with this, architect interviews will offer the expertise and insight of experienced architects as authoritative knowledge (Kivunja and Kuyini, 2017), situated within the participants' own specific experience. The teacher and school staff interview data are rooted towards constructivist thought, situated within post-modern realism (Lincoln and Guba, 1985), which aligns with the pragmatic standpoint. As noted by Holstein and Gubrium this type of social constructionist approach can sometimes emphasise "the *hows* of social process at the expense of the *whats* of lived experience" (2012, p.69). The focus of this research, however, will be more balanced towards the *whats* – the experiences of the participants and their reflections on those experiences will be foregrounded, in line with the pragmatic approach. This orientation can be partly attributed to the nature of the research – whilst experiences are varied and interpretive, the built environment which is under discussion offers a tangible basis for those experiences. Further though, my own theoretical orientation towards agency and knowledge provide a basis for this approach.

Additionally, given my personal position and past experiences in the education sector, both as teacher and researcher, I am particularly well-placed to engage in experiential inquiry in this context. I have a specific awareness and understanding of the contexts and environments from which school staff are framing their knowledge, allowing for immersive

interviews, akin to insider or peer interviews (Devotta et al., 2016; Costley, Elliott and Gibbs, 2014). The reflexivity of the research is explored below, as an integral and shaping aspect of the methodological approach.

3.2 Research Design

The research design included semi-structured interviews, developed from an interpretive perspective, with the combination of interpretivism and pragmatism a practical and established approach (Wagenaar et al., 2022; Goldkuhl, 2012). The broad aim of the research was to understand what architects and school staff want from their schools, and to do this through gaining insight into their lived experiences of school buildings. Hence, data collection methods had to allow for an exploration of participants' experiences and opinions, enabling the voices of stakeholders to be heard (Silverman, 2017; Kamberelis and Dimitriadis, 2013). This is also a common approach taken by other researchers exploring the use of school spaces (Woolner, Thomas and Charteris, 2021; Kraftl and Adey, 2008), as well as more broadly in different institutional settings, including public buildings, schools and healthcare settings (Butterfield and Martin, 2014; Adams et al., 2010; Fox, 1997).

This research was reframed due to the COVID-19 pandemic's impact on research and data collection practicalities and restrictions. As a result, the research was approached a small-scale exploratory study bringing together architects' and teachers' perspectives in a novel way, with the aim of exploring issues around school design in depth with these participants rather than aiming for a large-scale sample. The originally planned approach of the research was to include children in schools as a main participant group. However, given the context of the COVID-19 pandemic, virtual interviews had to be employed as the main data collection method, as discussed further below in Section 3.2.2. Due to the ethical and practical challenges of conducting virtual interviews (Donison et al., 2024), it was not possible to include children as participants. Instead, the research design involved an exploratory study to understand the views and experiences of other stakeholders – teachers and architects – with a view that further research could be conducted with children in the future to provider a fuller picture.The project drew on the perspectives of a selection of architects with a range of experience and at varying career stages. These architecture participants provided a grounding for the subsequent school staff interviews, offering contextual insights into the practice of architecture and the experiences of architects working on school building projects. In addition, a range of school types and a variety of staff roles within schools were included in the participant sample to provide in depth exploration and

uncover the lived experiences of school staff working in different environments. Contextualising secondary data was also used, in the form of images, architectural drawings and planning documents to provide a grounding for the analysis (Rudestam and Newton, 2007).

The research design was made up of two strands with slightly different approaches, both following a similar semi-structured interview approach as outlined below. This allowed for the interviews to be tailored to the respective participant groups and was in line with the differentiation of my position as an outsider (to architecture) and an insider (to education and teaching). Architects were interviewed first, to gain context and an initial grounded understanding of the practicalities and landscape of school planning and building. The inclusion of architects as participants adds to existing research by gaining the untapped views of architects – while architects frequently take part in research on school design (see for example DfES, 2003), they are not often included as research participants in this area. In addition, architect interview data was used to sensitise the researcher to the field of architecture and the built environment of schools prior to interviewing teachers. Architect interviews were followed by interviews with teachers and school staff to gain insight into their lived experiences of these buildings. The inclusion of teachers as participants, sharing their lived experiences and their perspective as experts in the field of teaching and education, and therefore in the use of their schools and classroom to teach, provided an overlooked perspective on the design of school buildings. Previous research has suggested the importance of including teachers in discussions around their school buildings and bringing them into dialogue with architects (Wright, Thompson and Horne, 2021).

Architect interviews were conducted remotely, in a semi-structured interview style, allowing for in-depth discussion and exploration of their experiences (Back, 2012). Teachers and school staff interviews were a mix of remote and in-person, depending on their preference and availability. One school visit took place, during which the Headteacher and School Site Manager were interviewed in a walking interview style, to gain a clear understanding of their use and experience of the space (Kinney, 2017; Jones et al., 2008). Photo-elicitation methods were used in some interviews, based on participant preference and adapted to an online context as necessary. Architects were encouraged to provide images during or after the interviews, to aid in their descriptions and explanations of projects, which allowed an in-depth understanding of the spaces being discussed. Teachers and school staff were given some information before their interviews to encourage them to think about their school buildings, without requiring any specific preparation. The School Site Manager provided several documents including plans of the school site and buildings, to give an overview and provide context prior to the walking interview.

The extent to which images and documents were used during the architect interviews, which were all virtual with images and documents shared using email or screen-sharing, resulted from a creative application of photo-elicitation methods (Mason, 2017; Harper, 2002). Images and documents were provided by, and familiar to, the participants. Several participants used screen-sharing during the interview and then talked through the images or documents as they discussed their experiences. This allowed for an in-depth exploration of the buildings they were discussing and allowed me to ask relevant probing questions using the shared documents as a guide. The use of images to elicit additional depth and support participants to feel comfortable is well-established (Harper, 2002) and the creative translation of this method for virtual interviews has been gaining ground due to the COVID-19 pandemic (Marshall et al., 2023). In this case, it allowed for the architects' images to be a valuable and fully utilised resource, particularly where screen-sharing was used during the interview.

Thematic data analysis was carried out in two parts – themes were identified separately in data from architect interviews and data from school staff, and a comparison of the spread of key themes between architects and school staff was then drawn out. This thematic analysis was used to identify and explore key findings, with quotes and explorations of participant experiences used extensively to illustrate themes and centre the voices of participants (Kamberelis and Dimitriadis, 2013; Oakley, 2005).

By adopting a qualitative, interpretive methodology, the research allowed participants to share their lived experiences in detail, affording high levels of *verstehen* – understanding and insight (Weber, 1962). The detailed nature of the interviews ensured that participants had the opportunity to fully explore their experiences by talking in detail, and for school staff they were able to discuss experiences with me as someone with experience of the teaching profession without having to provide significant additional context for full understanding. To gain the richest data from the virtual interviews, a creative approach was adopted to interview methods. This included the option of sharing images and drawings, which translated photo-elicitation to the virtual interview environment (Marshall et al., 2023). In addition to interviews, secondary data such as government guidelines (Building Bulletins) and news reports were used to place the information gathered in interviews in the wider context. This use of contextualising secondary data adds further depth to the research and allows for more insightful analysis of the interview data (Rudestam and Newton, 2007; Lincoln and Guba, 1985). Further, by developing a deep understanding from the detailed interviews, the analysed data successfully fulfils the aims of the research by exploring the research question in depth. The presentation of this data analysis through the use of line drawings also offers deeper context and understanding of the interview data, extending

existing discussions around sketching as a method of data collection and analysis (Brown et al., 2021).

3.3 Data Collection

3.3.1 Sampling and Recruitment

The research adopted a strategic approach to sampling, using a combination of established qualitative methods: purposive, convenience and snowball sampling (Bryman, 2016). Purposive sampling, a non-random form of sampling whereby participants are chosen specifically for their relevance to the subject matter and research question and aims, was used initially, particularly to identify and recruit architects with experience of designing school buildings. Convenience sampling was also utilised where the potential participant had an existing relationship with my myself or my colleagues and had relevant experience. As part of the utilisation of convenience sampling, recruitment from personal contacts helped to recruit teachers with experience of the recent redesign of their school buildings. While recruiting from personal contacts presents both challenges and opportunities, it is a valid strategy, particularly for studies of an exploratory and small-scale nature (Brewis, 2014; Blichfeldt and Heldbjerg, 2007). This convenience sampling and recruitment through personal contacts (for both teachers and architects) was particularly helpful given the context of the COVID-19 pandemic and the extreme difficulties faced in recruitment.

From the initial purposive and convenience sampling, snowball sampling was possible by asking initial participants to pass details of the study onto their colleagues and other relevant contacts to broaden the pool of participants. As discussed by Bryman (2016), this combination of sampling techniques is appropriate for qualitative research of this nature, where the experience of the participants is important and there is not a need to generalise results to a population. Furthermore, as discussed by Morse et al. (2002), this gradual expansion of participant recruitment ensures the quality of the research by gaining an adequate number of participants. By adapting my sampling through different stages of the research, I gained the broadest range of participants and collected appropriate levels of data (Strauss and Corbin, 2015). The sampling and recruitment methods, discussed further below, demonstrate that participants with a variety of experience levels, subject specialisms and age ranges were included. This, in addition to purposive and snowball sampling methods adopted, enabled me to gain as much breadth as possible within the small, exploratory sample, alongside the depth of high-quality data collected through the in-depth interviews which is imperative for qualitative research (Morse et al., 2002).

Architects

Practically, recruitment involved contacting architecture practices operating in the UK, beginning with the practices with the most relevant experience, as determined through web searches and exploration of architecture practices involved with notable projects. Any practices or individuals involved in the design of schools of particular architectural interest (for example those nominated for the Stirling Prize or RIBA awards at regional and national level) were also contacted for recruitment. From there, snowball sampling was utilised to build a larger participant base. By expanding and adapting the sampling methods as the research progressed, I ensured the "scope, adequacy and appropriateness of the data" (Morse et al., 2002, p.20) and thus enhanced the *trustworthiness* of the research (Rudestam and Newton, 2007). The sample aimed to reach practices of different sizes and architects who had been involved with projects for a variety of stakeholders and funders – including the private sector, councils and local authorities, and community groups. Most architects were contacted through their practice, although some were contacted directly through websites such as LinkedIn where there was a specific interest in an individual's experiences. Recruitment of architects took place between Autumn 2021 and Summer 2022.

In total, ten architects and one Local Authority Commissioning Manager were recruited – the latter had significant relevant experience to sit alongside architects with expert knowledge in the field and was included as a result of snowball sampling from an architect. The architects ranged in experience, from those with just a few years of experience, up to Partners and Founding Directors of both UK-based practices and international practices with a UK presence. Several had worked on central government funded school building projects, others on local authority commissioned school buildings, and one was currently working on projects for independent (fee-paying) schools. A breakdown of the architect participants can be found below in Table 1.

Pseudonym	Position	Type of Practice/Organisation
Alex	Founder	Small independent practice – currently no other employees
Fiona	Associate Director	UK-based practice with smaller regional offices with a focus on sustainability
Hugh	Founding Director	Cross-European practice taking on projects in a range of sectors
Iain	Director	UK-based practice with a focus on community and education projects
Ionna	Founding Director	UK-based practice taking on international projects in a range of sectors
Louise	Architect	UK-based practice with a focus on sustainable design
Oliver	Senior Architect	Multi-national practice with UK HQ taking on projects in a range of sectors *Oliver works mostly on Education projects*
Oscar	Associate	Cross-European practice taking on projects in a range of sectors
Sasha	Senior Associate	UK-based practice taking on projects in a range of sectors
Terry	Local Authority Commissioning Manager	Manager commissioning school projects for an urban council area
Tim	Partner	UK-based multi-disciplinary practice working in a range of sectors

Table 1: Participants – Architects and building professionals

Teachers

The sampling of teachers followed the same principles as sampling for architects, firstly using purposive and convenience sampling, with snowball sampling also used once some initial respondents had been recruited (Bryman, 2016). Convenience sampling was used more so than during architect recruitment, due to my extensive existing relationships with teachers and school staff. Sampling aimed to reach a range of primary and secondary school teachers in a range of settings within the UK with a range of experience levels and types of school building. The sampling also included schools who had received funding as part of the Priority School Building or Building Schools for the Future programmes. Recruiting teachers with a range of experiences offered the broadest and most credible data (Lincoln and Guba, 1985).

An initial round of recruitment resulted in four interviews. Further convenience and snowball sampling resulted in a further four interviews including three teachers and one teaching assistant. Finally, one school headteacher, whose school had received PSBP funding, agreed to facilitate a school visit. There was a school visit included an in-depth walking interview with the headteacher and a further in-depth interview with the school's site manager. Significant value was added to the research by the inclusion of this walking interview and site visit (Kinney, 2017; Mason and Davies, 2009), which will be discussed below. Recruitment took place between Spring 2022 and Winter 2023. In total, ten school staff were interviewed, including one mainstream primary school teacher, one Special Educational Needs (SEND) provision teacher, a specialist SEND teaching assistant, five secondary school teachers, a secondary school headteacher, and a school site manager. Further details of these participants can be found below in Table 2.

Pseudonym	Position (teaching experience)	Current school
Alina	Assistant Principal and Psychology and Science Teacher (10 years)	Faith-based Boys' Secondary Academy, part of multi-academy trust
Allegra	Head of Physics (5 years)	Selective Girls' Secondary Academy *Same school as Evan*
Edith	School Site Manager (20 years)	Selective Secondary Academy *School visit, same school as Liam*
Eleanor	Design and Technology (DT) and Engineering Teacher (Newly Qualified)	Secondary Academy, part of a multi-academy trust High intake of SEND and EAL pupils
Evan	Head of Mathematics (12 years)	Selective Girls' Secondary Academy *Same school as Allegra*
Lauren	Primary School Teacher (20+ years)	Pupil Referral Unit
Liam	Headteacher and DT Teacher (20 years)	Selective Secondary Academy *School visit, same school as Edith*
Mia	1:1 SEND Teaching Assistant (2 years)	Primary School, part of large multi-academy trust

Olivia	English Teacher (10+ years)	Large Secondary Academy, part of multi-academy trust
Vince	Assistant Head and Primary School Teacher (10+ years)	Primary School, part of multi-academy trust

Table 2: Participants – Teachers and school staff

3.3.2 Interviews

Architects

Interviews with architects took place virtually, to allow for adherence to COVID-19 safety precautions in place at the time of many of these interviews, which began in Autumn 2021 with the final interview in Summer 2022. Individual interviews were deemed the most appropriate method, allowing for in-depth discussions with each participant, as well as being straightforward to carry out virtually. The specific challenges and benefits of utilising virtual interviews are discussed in more detail below, including the potential for accessibility issues as well as the convenience they afford (Howlett, 2022; Seitz, 2015; O'Connor et al., 2008). Interviews were semi-structured and informal, ensuring participants were able to share experiences fully and without undue direction from the interviewer (Back, 2012). The interviews had some structure to ensure that the data collected would relate to the areas of research interest and that essential areas – based on existing research and literature – were discussed, but discussion prompts and questions were used sparingly so as not to curtail responses. The structure of the interviews roughly followed the Interview Topic Guide (Appendix 1 – Interview Topic Guides), although not necessarily in a linear or chronological way. The Topic Guide was designed around the stages of a building project as outlined by the RIBA Plan of Work (RIBA, 2020), to encourage architects to discuss all stages of the building design process. This Plan of Work is an eight-stage project management protocol that organises architectural work into briefing, design, construction and occupation tasks. Designing the interview prompt material in this way allowed me to easily cross reference the elements that were of interest for the research with the way in which architects and practices work and how projects develop. Given that this process is not always linear or in an order that would be innate to a non-architect like myself, it was important not to enforce an

interview structure that did not line up with the architects' ways of working. This approach immersed me into the professional world of architects and, as a result, the participants were able to share their experiences and knowledge in their own way (Rudestam and Newton, 2007).

Architects were expected to explore, to a greater or lesser extent, their professional background and the experience they were drawing on, for context; the range of projects they had worked on; and specific education projects they had been involved in. Utilising the main elements of the RIBA plan of work, the interviews were formatted largely around the following prompts:

0. Strategic Definition – basic client requirements (determining the need for a building), site appraisals and feasibility, including examining project risks and budgets.
1. Preparation and Briefing – elements such as tendering, partner organisations, stakeholder engagement, length and scale of the project.
2. Concept Design – initial design of the project, including master plans where relevant.
3. Spatial Coordination – including discussions of furniture, movement around the space, interaction between indoors and outdoors.
4. Technical Design – practical considerations around design features and technical specifications of internal systems (for example heating, lighting and integration of ICT equipment).
5. Manufacturing and Construction – working collaboratively with construction partners to fulfil the project.
6. Handover – how end-users are presented with their (new or extended) building, how it is received, knowledge exchange for use of key systems such as heating.
7. Use – outcomes including any formal post-occupancy evaluation or informal feedback from end-users.

It was anticipated that participants would also discuss their personal preferences – their architectural style or personal taste – policy trends and how this may have affected their projects (including Building Schools for the Future and Priority School Buildings Programme), and their desires for future school building projects. Whilst the Topic Guide demonstrates an expected possible direction for the interviews, it was only used loosely in order to allow the participants as much free talking time as possible, to gain the most from their knowledge and experience.

Additionally, architects were encouraged to have documents from their projects to hand (such as design drawings) to form the basis of the discussion, although this was not always possible due to the virtual nature of the interviews. Where architects did use specific documents to help in their explanations, these were shared with the interviewer either during the interview via screen-sharing or after the interview via email, to allow for use during the analysis stage, as explored above. These helped to triangulate the interview data by contextualising the architects' comments and so added another dimension to the data collected (Harper, 2002).

The substantive (recorded) portion of the interviews lasted up to an hour, with a preceding discussion (which was not recorded) to answer the questions asked by the participant after reading the Information Sheet and to confirm the participant's consent. All interviews took place either using Microsoft Teams or Zoom, based on the preference of the participant, and transpired with few to no technical issues, providing almost entirely clear recordings without any significant loss of understanding or inaudible speech. One participant (Oliver) used screen-sharing throughout the virtual interview to talk through a specific project using an existing presentation he had created. The other participants talked from general experience and used specific projects as examples when they felt it appropriate or when it helped them to explain their point.

As discussed above, a Topic Guide (Appendix 1 – Interview Topic Guides) derived from the RIBA Plan of Work was utilised to retain focus and direction, and to ensure important information was not excluded. It is pertinent to note here that all participants discussed work in relation to all (or most) of the seven RIBA Plan of Work elements spontaneously, leaving little need for prompting. This demonstrates that this is the way in which architects work in practise and think about their work. This adds credence to the usefulness of this guide as a methodological tool in both conducting interviews and in understanding and analysing the data.

Teachers

Similar to architect interviews, some teacher interviews were conducted virtually, although this was mainly due to practical geographic considerations, as at the time of the teacher interviews between Summer and Winter 2022 most COVID-19 precautionary restrictions were no longer in place. In total, ten school staff were interviewed. This included five in-person interviews, where this was feasible and preferred by the participants. The in-person interviews included one individual interview, one joint interview with two participants who

worked at the same school, and one school visit during which the headteacher and school site manager were interviewed. Five participants were interviewed virtually.

An active interview approach was adopted (Holstein and Gubrium, 2012), using semi-structured interview techniques to create a conversational atmosphere; this gave participants the opportunity to share their experiences in depth. There was limited use of a loose Topic Guide in these interviews, as opposed to the architect interviews, because of the more conversational nature of the teacher interviews and my insider knowledge (Devotta et al., 2016). This approach would usually be conducted in person for ease of the co-creation of data (Holstein and Gubrium, 2012), compared with less interactive and dynamic settings (for example, virtual interviews). However, ways of mitigating this for virtual interviews were established, as laid out below. In addition to engaging in active interviewing and therefore being a co-participant in the interview process (Holstein and Gubrium, 2012; Hertz, 1995), I have specific knowledge relating to teaching and being involved in classroom activities and school administration from my time working in schools. This existing knowledge allowed me to act as a sort of peer interviewer in my interviews with school staff (Devotta et al., 2016) – my shared insider knowledge helped me to develop rapport with participants as well as decipher any context specific language and references, both during the interview and during data analysis (Costley, Elliott and Gibbs, 2014).

Whilst this type of interviewing has previously been criticised for opening the possibility for bias and misunderstanding (Gorden, 1975), contemporary researchers have established that interviews are “not merely a neutral conduit” for objective knowledge and participants are not vessels of a “pure informational commodity” (Holstein and Gubrium, 2012, pp.68; 78). Given the acceptance by social constructionists that meaning is shaped through the interview process and all interview data relies on the interaction between participant and researcher to some extent, it is possible to adopt such methods and gain data that is credible and dependable (Lincoln and Guba, 1985). The combination of detailed interviews that fully explored participants’ experiences and the initial purposive sampling also added credibility to the data collected by intentionally selecting schools that offered a range of pupil intake characteristics (co-educational and single sex, selective and non-selective, urban and rural catchment), ages and building types (Rudestam and Newton, 2007; Lincoln and Guba, 1985). Given my personal experience, discussed above, as the researcher I was able to appropriately engage in the active interview process and shared some of my own experiences as a means of building rapport with participants. This helped to elicit discussion and gain knowledge from participants through collaboration and interaction.

As with architects, these were mostly individual interviews as opposed to group interviews or focus groups, to ensure participants felt able to share their experiences freely. Given the nature of the information sought, the interaction that is of such importance in focus groups and provides insight into group dynamics (Kitzinger, 1994) was less useful here, therefore it was deemed most appropriate and valuable to give participants the time to provide detailed descriptions one-to-one with the interviewer. Additionally, it was important that the views of all different types of school staff were taken with equal weight and so participants needed to feel comfortable to share their experiences in the knowledge that what they discussed was valued and confidential. This is a particular benefit of individual interviews over group settings, as there is evidence that in group interviews and focus groups some voices become dominant, particularly where there are existing power structures at work in the group (Breen et al., 2019; Hertz, 1995). Given the hierarchical nature of the school setting, it is possible that some staff could have felt their views were more or less important than others, which could have resulted in a lack of data from underrepresented groups. This would have offered a less rounded and contextualised picture of the use of school buildings. While almost all interviews were one-to-one for these reasons, one interview took place with two participants together. These teachers worked at the same school, shared a close personal relationship, and they were of equal rank in the school setting (both heads of department), therefore this was not deemed to be problematic in this instance.

Participants were given some information approximately a week prior to interview, to allow them to consider their thoughts on their school buildings. However, participants were not asked to prepare for the interview, as this would have added a level of additional work and burden that would not have been reasonable. Giving them the opportunity to think about their school's physical spaces beforehand was useful though, and many commented during their interviews that they had found it interesting to think about their school buildings.

It should be noted that while the use of virtual interviews for architects and some teachers posed challenges as distinct from in-person interviews, these were minimal due to the non-sensitive nature of the discussions and the IT literacy of the participants and so were overcome successfully in this instance. In some cases, the technological competence of participants can pose a barrier to the use of virtual interview techniques (O'Connor et al., 2008), but given the use of technology in the architectural profession and in schools due to COVID-19 all participants were familiar with virtual meeting software. Aside from this, allowances for the virtual interview format were made to ensure the quality and validity of the interview is maintained (Seitz, 2015; Howlett, 2022). I, as the interviewer, was in a quiet space without disturbances, using a laptop (rather than a mobile device) and participants were asked to do the same wherever possible, to minimise background noise and maximise

clarity (Mirick and Wladkowski, 2019). Due to the nature of their work, participants all had a suitable place to set up for the interview, either in their workplace or home-office and all had adequate internet bandwidth to conduct the interview. Where there were small audio problems during an interview, I minimised “the awkwardness of having to ask participants to repeat themselves” by asking for them to slow down and using “the participant’s own words” in follow up questions and responses to help maintain the professionalism and rapport of the interview while clarifying responses (Seitz, 2015, p.231). I also used intentional facial cues more deliberately than during in-person interviews, such as nodding and smiling, and was careful to avoid talking over the participant (Prior and Lachover, 2023). Given the non-sensitive or personal nature of the discussion, the lack of intimacy that can be difficult to overcome in a virtual interview did not affect the quality of the data collected in this case (Seitz, 2015; Deakin and Wakefield, 2013).

Whilst the above allowed for virtual interviews to give credible data as part of this research, there are benefits of adopting a walking interview style (King and Woodroffe, 2017; Jones et al., 2008), hence adopting this style for the final interview, with the Headteacher and School Site Manager. I was able to physically contextualise the interview data, and even create illustrations based on field notes. As discussed by Jones et al (2008), this way of contextualising the interview and using the spatial aspect to greatest effect can add significant value to the data, with the *where* being of significance in this research rather than using the act of walking as a distraction or rapport-building technique. There are many practical considerations for such interviews (King and Woodroffe, 2017; Kinney, 2017), particularly surrounding safety for both participant and researcher, but these were mitigated in this instance due to the interview taking place in a school environment and therefore being controlled and secure. There are also several general benefits of the walking interview technique including helping to reduce the power imbalance between myself and my participants, and encouraging an informal rapport and conversational atmosphere which can elicit more detailed discussion (Kinney, 2017). Being physically present in the space with the Headteacher and School Site Manager allowed the interview to include the elements of the space that may have been overlooked in a “conventional sedentary interview” (Holton and Riley, 2014, p.61), and thus would have been rendered invisible to me if the interview took place in a neutral setting or virtually. The aspects of the environment that were of little consequence to the Headteacher, or that were not the focus of conversation despite being mentioned, were also of interest during the analysis, and when considering the data from other participants.

In practice the experience of the two sets of interviews with architects and teachers reflected my perspective as an outsider and insider respectively. Architect interviews were

informative, and I asked probing questions in order to get more specific detail on why architects made certain decisions or how they felt about the process. While the use of the RIBA Plan of Work for my own framing of the interview helped me to be confident in my position as interviewer, and therefore reassure participants of my capability and understanding, my encouragement for architects to be more detailed was also well-received. They were always happy to provide more detail or give more thorough explanations and educate me on their field of expertise. On the other hand, in many teacher interviews, after introductions and a brief background of the research and my own personal background, I said very little, and it proved to be a space for participants to share their thoughts uninhibited. I was able to offer occasional input from my own experience, which reassured participants of my empathy and understand of the challenging situations they faced every day, giving them the opportunity to share their perspectives without restraining themselves. This is demonstrated through the interview data presented in Chapters 4, 0 and 0 with some particularly forthright and humorous quotations from teachers.

3.4 Data Analysis

Architect Interviews

Interviews were recorded using the recording function on Microsoft Teams or Zoom (depending on the participants' preferred virtual meeting program), converted to an audio file and transcribed by an external transcriber, with a contractual Confidentiality Agreement in place. Thematic analysis was then carried out, following a process of listening back to interview recordings in the first instance, noting significant features and then cross-referencing those notes to pick out initial key themes and particularly interesting quotations (Braun and Clarke, 2021, 2006). Once I had a broad, overall understanding of the interviews, I used visual representations to lay out the identified themes, allowing for a starting point to build upon. Interview transcripts were then coded in detail using NVivo 20 to organise the transcripts and themes.

Using my notes and visual representations as a starting point, I worked with the transcripts in NVivo to identify significant codes arising from the interview data. The codes were established through the understanding of this interview data as authoritative knowledge, in line with the pragmatic research paradigm (Creswell, 2014). These codes were then grouped into broader thematic areas and ultimately, I drew out patterns from the

data. As part of the analysis of this data, I made use of photographs and illustrations provided by interview participants, where consent was given to do so, to offer a greater understanding of the specific buildings mentioned and to aid in explaining this data clearly. In presenting these contextual images, I created simple line drawings using Adobe Illustrator, rather than the original images, to ensure the anonymity of the participants. This approach has provided a “material form” to some of the spaces discussed, without compromising anonymity, and is a useful tool for “communicating research findings” and “concretising what has been said” (Brown et al., 2021, p.2).

Teacher Interviews

Interviews were audio recorded using a Dictaphone or recorded using the recording function on Microsoft Teams or Zoom as appropriate. The walking interview was recorded using a Dictaphone and attached microphone for the best audio clarity. As with architect interviews, these were transcribed by an external transcriber.

The interview data from school staff was analysed thematically in combination with my notes on the specific schools that were discussed. All of this data was gathered in NVivo 20. Similarly to architect interview data, I familiarised myself with the data and noted initial impressions while listening to recordings, for an immersive analysis (Braun and Clarke, 2021). Subsequently, I used NVivo to organise the transcript and detailed coding and themes. Teachers and school staff did not provide images, however, as with architect interviews, I created line drawings to aid in the analysis and presentation of the data, to ensure anonymity while retaining the descriptive value of visual images (Brown et al., 2021). Teachers did not provide images – these line drawings were instead based on their descriptions or my own notes where I was able to view the school, for example when teachers were at school during the interview and could show me the space they were referring to.

Triangulation

Analysis of architect and teacher data was initially separate, with themes drawn out from each set of data to represent the experiences of participants within their specific context. Following this, I explored the similarities and differences between the themes from the various groups. This was achieved through cross-referencing codes, themes and patterns

drawn out from the data, between the teachers and school staff and the architects. This formed the basis for conclusions to be reached and the research question answered, along with identifying areas of particularly significant consensus or disagreement between groups which offered greater insight into the key themes. This ordered approach offered the most valid and credible overall impression through the triangulation of the data (Flick, 2007).

3.5 Reflexivity

As noted above, I am particularly well-situated to conduct the research presented. I am positioned as an insider to the teacher and school staff interviews, due to my background working in schools, both inside the classroom as teaching support and teacher, and outside the classroom in a student support capacity. In contrast, I had an outsider perspective when approaching architect interviews, which worked well to elicit the most detailed information from them, with them using technical terms or jargon without explaining further or presuming knowledge on my part.

As an outsider to the field and practice of architecture, I approached architects with an open goal of learning about their work from them. This was often a welcome approach, and many architect participants were openly keen to share their work with an outsider in this way. Some architects expressed in their interviews the desire to educate others in what architecture could offer, which demonstrated their desire to share their knowledge and expertise with others and their passion for the field of architecture. While I did some research before these interviews to gain a broad understanding, including an understanding of the RIBA Plan of Work stages (RIBA, 2020), I intentionally kept this limited so as to approach these interviews with a level of impartiality and receptiveness. This was important as it allowed me to appreciate the realities of their practices and experiences, without coming to the interviews with a predefined notion of how the architects would work. Meanwhile the challenges that can be faced by outsider researchers were largely avoided, as the nature of the research did not involve culturally or personally sensitive topics (Joseph, Earland and Ahmed, 2021).

Given my extensive knowledge of schools, as spaces and institutions, and of teaching and education more broadly, I understand the specific context in which teachers are working and the parameters they must work within. I also have a strong understanding of pedagogic principles and teaching strategies. This insider knowledge allowed me to build rapport quickly with teacher participants and ensure they felt at ease (Devotta et al., 2016). This

insider perspective helped in gaining research participants, and by mentioning my background in the initial contact during recruitment I was able to build a connection with potential participants quickly. In interviews, this insider status allowed teachers to talk about their preferred teaching strategies or tools used in the classroom without lengthy explanations of terms or language. I was able to ask relevant and appropriate probing questions which elicited depth and allowed for more insightful discussions (Devotta et al., 2016). While there are challenges with being an insider researcher, or peer interviewer, my situation as, in essence, a former insider was useful here. That is, I have a strong understanding of teachers and schools, and indeed my own preferences in teaching style and pedagogy. However, I am no longer in the field of education and have been outside of or tangential to the field for a significant amount of time, hence I have been able to approach from a perspective of insider knowledge without the misgivings or strong opinions a current insider may have based on their current or ongoing experiences (Costley, Elliott and Gibbs, 2014).

3.6 Ethics

The research was conducted in line with British Sociological Association guidelines (BSA, 2017) and conformed to General Data Protection Regulations (Data Protection Act, 2018). Participants were ensured their interviews would remain confidential and anonymity, as far as was in my control, as explained below. All data has been stored securely using institutionally approved cloud-based storage and a back-up kept on a fingerprint secured and encrypted external hard drive. I worked from home for much of the project, due to the COVID-19 pandemic, and so ensured all data was accessed securely on an encrypted and password protected device, which was not used by any other individual. Upon completion, anonymised data will be uploaded to the UK Data Archive as recommended by the University of York and the ESRC, to allow use by future researchers, which was agreed to by participants on their consent forms.

All participants received an Information Sheet detailing the purpose of the study and data storage arrangements and they provided informed consent before, or at the beginning of, their interview. There was a separate Information Sheet for architect and school participants, with the description of the project and interview topics adapted to the participant groups. The Information Sheet and Consent Form (Appendix 2 – Participant Information Sheets; Appendix 3 – Consent Form Template) were provided to all participants via email before their interview, and some returned the signed consent forms via email before their interview.

Where participants did not return the consent form prior to interview, I went through the Information Sheet and consent form before beginning the substantive interview and before starting the recording. In virtual interviews, this involved screen-sharing with the documents open and asking the participant to complete the consent form with a typed signature. During in-person interviews, I provided paper copies of the documents and went through them with the participants. Participants had ample opportunity to ask questions about the research and were given the opportunity to withdraw their consent within a specified timeframe without explanation – this timeframe differed based on when the interview took place, with the final participants, interviewed in Winter 2022, having until January 2023 to withdraw.

Architect Interviews

In interviews with architects, it was unlikely that sensitive issues would be raised, although there was the possibility of commercially sensitive discussions of building projects or other professionals. Participants were assured that their interviews were confidential, and all identifying remarks (including those identifying other architects or architecture practices) would be anonymised in the interview transcripts and subsequent data analysis. Due to COVID-19 considerations, all architect interviews were virtual, so there was no risk of harm arising from meeting in-person for the interview.

They are anonymised in all research outputs and no photographs or architectural drawings of their buildings have been used. Some images have been created, in a line drawing style, to represent some of the buildings or features discussed. The basic line drawing style was specifically used to create images so that buildings and participants would not be identifiable. The elements of data collection that could impinge on anonymity were made explicit to the participants prior to their consent, and all reasonable steps have been taken to maintain their anonymity and the confidentiality of their data. The limitations to anonymity related to the use of snowball sampling and the possibility of those with significant knowledge of school architecture identifying an architect from the descriptions of the schools they had designed. However, this possibility is remote and outside of the control of the researcher.

Teacher Interviews

Participants were interviewed virtually or in a space of their choosing. This was possible at the time of the teacher interviews, as most COVID-19 restrictions had been removed or

relaxed, and this allowed participants to choose a time and space that was comfortable and easy for them, both helping to build an initial rapport with me and ensuring participation was as straightforward as possible for them (Elwood and Martin, 2000). Where participants were interviewed in-person in a private space, I was personally acquainted with the participant which mitigated any safety risks. The walking interview, with a Headteacher and School Site Manager, was conducted on the school site during the normal school day, which mitigated any risks. In addition, I contacted my spouse before and after all in-person interviews and he knew where the interviews were taking place, in line with my granted ethical approval.

The nature of the discussions also meant there was little risk of harm to any participant, although it was noted during the ethical approval process that these staff may have been experiencing acute work-related stress, particularly due to the ongoing impact of the COVID-19 pandemic on the education sector. As a result, I was prepared to offer signposting to support organisations during these interviews and I had contact information to hand for several support organisations including the Samaritans. This prepared me for the event that a participant disclosed suffering excessive stress or anxiety, although this was ultimately not required during any interview.

Anonymity for school staff was maintained in all research output, through the use of pseudonyms and redaction of identifying comments from any quotes. As with architect participants, it was not possible to guarantee anonymity without reservation, as it was possible that someone with significant knowledge of school architecture could identify a school from a teacher's description. However, the researcher maintained individual anonymity and confidentiality throughout, ensuring all possible steps were taken to avoid the identification of individuals, even where a school may be identifiable. This limitation was communicated clearly to participants and the possibility of any identification was extremely remote.

3.7 Limitations

As with all research, there are limitations and boundaries that the research must operate within, in terms of the breadth and scale of the research undertaken. It must also be noted that the COVID-19 pandemic has had considerable impact on the research outlined here, and as such the methods of data collection vary from those that would have originally been pursued. This has resulted in additional limitations to those which were already faced due to the scope and approach of the project.

Architect Interviews

As a result of the COVID-19 pandemic, all interviews with architects took place virtually, using a variety of video conferencing software. This had some limitations as opposed to in-person interviews, which offer a huge resource of non-verbal information including interpretation of body language, flow of conversation and building rapport (see Atkinson and Silverman, 1997). Nonetheless, it was possible in virtual formats to retain many of these elements of interviewing, that add value and depth of understanding, by making adjustments to maintain similar quality and levels of detail as discussed in Chapter 3.3.2 (Seitz, 2015). Additionally, participants all had significant knowledge and experience of using virtual conferencing software, which allowed them to feel comfortable participating with minimal technical issues arising.

Although virtual interviewing has some limitations, which have been successfully overcome in this research, it is also worth noting that it offered some benefits. Arranging interviews was simplified as the time needed did not include any travel time and so often the researcher and participant could be more flexible and schedule the interview more easily. Given that the architecture participants sought for recruitment were based across the country, the use of virtual interviews allowed the researcher to set aside any possible travel concerns as a factor in recruitment, focussing solely on the experience and expertise that a participant could offer, thus ensuring high quality data. Many of the architect participants had particularly hectic schedules and so the use of virtual interviews also allowed them to more readily find time to fit in an interview, between other (often virtual) meetings, as less time was needed either side of the interview to prepare a space or travel to another location. This flexibility likely had an impact of the ease of recruitment, the number of architects who participated, and on the seniority/experience of the architects who participated (several participants were Directors or Senior Associates who would have been unlikely to find the time for an interview if travel time had been a factor).

Aside from the limitations placed on the research by COVID-19 restrictions, the sample size of architects was relatively small. Although this limits the conclusions that can be drawn, the qualitative approach intends to demonstrate validity and explore experiences in depth, rather than attempting to represent a wider group. The particular purpose of these interviews was to offer the researcher, as an outsider to this field, contextual insight and understanding of the practices and perspectives of architects designing school buildings, which was achieved. It also offered the insight of a group whose views are often overlooked and so

adds to the existing research in this area. Furthermore, although low in number, the participants had significant amounts of experience of school building projects and architectural practise. Many were working at a senior level in industry-leading architectural practices, had worked on projects nominated for national awards, and/or had experience working with UK governments to design school building programmes or exemplar schools. Therefore, these participants offered particularly rich data and were well-placed to provide the disciplinary context and expertise sought by the researcher. There was a data saturation from the in-depth interviewing of these eleven participants that allows for the research to be rich and valid (Silverman, 2017; Flick, 2007).

Teacher Interviews

As with architect interviews, the sample was relatively small, with the in-depth interviews offering rich data and not intended to provide representative conclusions. However, the richness of the data gathered from the in-depth interviews afforded data saturation from the ten participants (Silverman, 2017; Flick, 2007). Additionally, due to the insider knowledge of the researcher, the interviews were of greater depth than if the interviewer had been unfamiliar with teaching, schools and the terminology and pedagogic principles discussed, as explored in literature on reflexivity (Le Gallais, 2008; Brannick and Coghlan, 2007). This insider knowledge allowed for participants to talk about their experience, without having to define or explain language or pedagogic principles, and the interviewer was able to draw out more from the participant by asking appropriate follow-on questions.

A particular limitation of the school-level research, given the COVID-19 pandemic and associated restrictions which were in place for much of the research period, was the omission of children as participants. Ordinarily, it would have been considered extremely important by the researcher to gain children's views first-hand and allow their voices to be heard on an equal basis to those of adult stakeholders (Groundwater-Smith, Dockett and Bottrell, 2015; Robinson, 2014; Clark, 2005). However, due to the safety precautions being taken within education institutions (both in primary schools and in higher education research institutions) and the fluctuating situation within the UK during the course of this research, working with children directly was not practically possible. Despite this limitation, it is important to note that the views gathered, of architects and teachers, represent underrepresented voices in this area which are rarely explored in dialogue, and so provide high-quality and valuable insights that add to the existing research in this area.

3.8 Conclusion

The methodology and data collection methods – approached from a pragmatic standpoint and making use of interviews, alongside images and some secondary contextual data – have provided me with detailed data. The two strands of data collection, each approached from a specifically relevant position – adopting a pragmatic approach – has allowed me to collect credible data which will answer the research question appropriately.

My experience in school environments (both in a work and research capacity) offers additional credence to the data and supported participants – specifically teachers and school staff – to share their experiences fully. In addition, all adaptions to mitigate the impact of COVID-19 pandemic allowed for the completion of the data collection phase, whilst limiting the impact on the validity and richness of the data output. The forthcoming thematic analysis which cross-references and compares data from architects and school staff, supplemented by images and contextual data, provides an in-depth understanding of the issues being explored and fulfils the aims of the research.

4 Participation

This chapter explores the first theme from data analysis, participant engagement and consultation in the building design process, which has been hailed as the pinnacle of successful, community-centred spatial planning by many. This generally stems from the work of Sherry Arnstein in mid-twentieth century America (Arnstein, 1969). This chapter builds on Arnstein's work and extends it to highlight the complexities of implementing this in the area of school building design, and the tensions between the perspectives of architects and teachers. Arnstein's work and subsequent research is explored below, leading onto an analysis of interview data relating to participation and consultation in the design process. In practice for many teacher participants, there was a lack of participation, and they did not feel consulted in their school building designs. However, for architects it was considered important and valuable, but funding and practical constraints were a hindrance. This resulted in many participants discussing a type of tokenistic participation, which involved information sharing with little recourse for substantive input. Finally, there was limited discussion of participation that constituted some control being shared with the end-users, including an exchange of knowledge and architects learning from teachers as well as vice versa. While consultation and engagement were mentioned as important by almost all participants, the extent to which it was carried out, and to which teachers felt they had any legitimate control over design decisions was limited.

Working for the U.S. Department of Health, Education and Welfare led to her seminal work, *A Ladder of Citizen Participation* (1969), which laid out the levels of citizen participation in government planning decisions as rungs on a ladder (see Figure 1 below) – the higher rungs denoting more citizen involvement. Arnstein's ladder implies the higher rungs are better, from a partnership with local government and planners up to full citizen control with decision-making power being given over entirely to the citizens involved. This simplistic approach has been criticised by subsequent authors, for being "devoid of context" and offering only a "linear relationship" between the levels of participation (Collins and Ison, 2006, pp.4–5). Several authors have commented that Arnstein's ladder lacks complexity, with alternative frameworks offered up by theorists including Wilcox (1994), Connor (1988), Hurlbert and Gupta (2015) and Kotus and Sowada (2017). However, it is also important to note that Arnstein herself acknowledged the simplicity of her ladder of participation, and in fact intended the work to highlight the divisions of power in decision-making and provoke people to seek more power in these processes to "equalize their relationships with the local government" (Gaber, 2019, p.199).

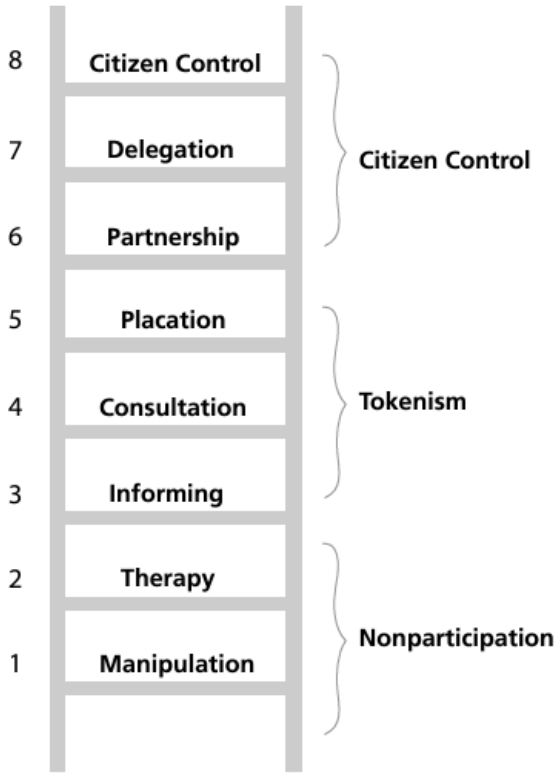

Figure 1: Arnstein's Ladder of Participation (1969)

Arnstein's work was set within a context of growing civil rights movements in America, and she intentionally positioned her work as a challenge to the existing power structures of local government decision-making at that time. She has drawn criticism from some who feel that her work does not draw attention to instances where citizens cannot be given control (Hurlbert and Gupta, 2015) and who feel that a higher value should be placed on collaboration and shared decision-making (Tritter and McCallum, 2006). However, Kotus and Sowada suggest her ladder does not go far enough, indicating that in many countries and regions Arnstein's ladder offers "an incomplete model" (2017, p.79). They use examples such as "areas of citizens' rights decline (e.g. North Korea, China, Turkmenistan or Sudan)" or the fall of Communism in Europe (2017, p.79). They posit that in these scenarios, "really collaborative actions" are few and far between, with many examples of conflicts of interest and manipulation (2017, p.85). They extend their own framework from non-participation through to rebellion and civil disobedience, which is a step further than even Arnstein's model and demonstrates the importance of context when considering appropriate levels of participation to ensure decision-making is truly shared.

Several theorists have offered alternative models to Arnstein's, without criticising her approach, which have been positioned as offering a more contextual and practical

framework. In particular, Collins and Ison (2006) suggest a focus on learning over participation is beneficial in highly complex situations – particularly the planning of environmentally sustainable measures. They suggest these issues can become ‘messy’ and high levels of citizen participation can be difficult to accommodate when there are numerous stakeholders who disagree on a contentious issue. They suggest a focus on social learning, which they describe as learning involving “collective engagement with others” which “may take the form of questioning norms, policies and objectives in interactive processes involving multiple stakeholders” (Collins and Ison, 2006, p.6). In the context of spatial planning and building, Collins and Ison suggest this social learning model allows for stakeholders to improve their understanding of important and complex issues and can result in consensus being reached through compromises and the agreement of shared goals. They suggest that this approach may prevent stakeholders acting out of their own specific interests and protects the integrity of necessary planning considerations (for example, the environmental impact of a plan).

There are also many models for participation with children and young people, which largely centre around the need for education and shared decision-making (Shier, 2001; Hart, 1997). Botchwey et al. suggest that youth participation is often “only as high as ‘placation’” on Arnstein’s ladder (2019, p.255) but they feel that "adults have a duty to offer methods for children to make decisions about their own lives, communities, and environments" (2019, p.256). They indicate that adults can help “bridge the gap” in terms of knowledge and experience and should act as “allies” to support youth participation (2019, p.256). Hart’s work (1997, 1992) has also stressed that methods of participation should “maximize the opportunity for any child to choose to participate at the highest level of his ability” (Hart, 1992, p.11), with an emphasis on children having a choice and being well-informed. Similar to the more complex models of participation, the participatory models dedicated to children and young people indicate that there are numerous ways for children to be actively involved and for their participation to be genuine. It is possible to go beyond mere tokenism and allow them to share in the decision making, or at the very least for the process to be transparent and for them to be well informed and have a choice (Hart, 1992).

Based on the specific circumstance, many theorists suggest that there are different appropriate levels of citizen participation which offer genuine participation, ranging from adult-initiated shared decision-making to child-initiated and directed (Hart, 1992), from “patient participation in treatment decisions” to feedback and evaluation (Tritter and McCallum, 2006, p.163), from increasing citizen power to achieving consensus and self-management (Hurlbert and Gupta, 2015). These various frameworks and models of

participation demonstrate that there are effective ways of ensuring citizen engagement and involvement where full decision-making power is not appropriate, and whilst maintaining necessary scientific or societal elements in a design or plan, such as ensuring environmental sustainability is considered.

Interviews

In the interviews conducted, stakeholder engagement and participation of varying forms was discussed at length by all participants. Broken down into user groups, this ranged from engagement with the school senior leadership team (SLT); engagement with the wider school community, to include staff in all areas (SLT, teaching staff, administrative staff, grounds staff, catering team), pupils and parents; and the community in which the school sits, including residents of neighbouring properties and users of other local community facilities. In addition, the Local Authority (LA) was sometimes the direct client for the projects that were discussed, which reflects the nature of the policy and funding environment in England, although there were also examples where the schools were the direct client – either in the case of academies (who had won government funding bids) or fee-paying schools (who were directly paying for works). It is also worth noting that stakeholder consultation and engagement is an expected element of the RIBA work stages for architects and is also an explicit expectation in the government's building guidelines for school building projects (DfE, 2014a; RIBA, 2020), and so it is unsurprising that it was mentioned by all participants in some way. Nonetheless, it was often mentioned as tokenistic by the school staff interviewed and research has shown that consultation in relation to schools and other public buildings is often limited (see for example Bern and Røe, 2022; Woolner et al., 2007). This could reflect the lack of specific details in DfE guidance for architects (DfES, 2014a, 2014b) on how, and how much, to consult stakeholders and end users. Instead, the specifics are at the discretion of those involved in each school building project.

Taking into account the nuance of participatory frameworks for citizen involvement in planning, data from interviews is examined below in relation to three different ways in which participation in school building design was discussed by interviewees. The first of these relate to the ideas of non-participation and tokenism on Arnstein's ladder, and the latter is positioned more closely with the concept of social learning explored by Collins and Ison (Collins and Ison, 2006; Arnstein, 1969). Three quotes taken from participant interviews reflect the themes derived from the interview data. *If they'd asked us we could have told them* represents discussions indicating a lack of participation or engagement with teachers

and school staff, often leading to teething problems or building that were not fit for purpose. *We were shown plans at various points* is indicative of the ways in which tokenistic engagement or consultation with teachers was discussed, where plans were shared and discussed but there was little opportunity for feedback or adaptations. And finally, *educating people to what's possible* reflects discussions, mostly from architects, of offering up ideas and presenting teachers and school staff with possible options they may not have considered, 'educating' them to what other schools had achieved through their design. Whilst this latter idea of participation and engagement was mentioned by several architects, teachers did not share similar experiences.

4.1 Non participation: If they'd asked us we could have told them

There were several discussions during the interviews that demonstrated a lack of end-user involvement and participation in the design process for new or remodelled schools. This theme encompasses a total or near complete lack of participation, particularly with the actual end-users (i.e. teachers, teaching assistants, pupils). This section also includes discussion of instances where there was no end-user to consult, for example Master Plan projects, which were the main example of this theme from in the architect interview data. There were much broader examples from school participants, including Vince, a Primary School teacher and Assistant Head, referring to several examples from his classroom design that did not work well in practice, noting that "if they'd asked us we could have told them" this would not work. School participants discussed a range of instances where the end-users were not consulted, right through to the interpretation of Headteacher Liam that consultation input was ignored due to those involved having "a particular agenda". The following sections will outline cases of these consultation practices (or lack thereof).

Master plans

The main examples of a complete lack of participation or consultation from architect participants were in reference to Master Plan projects. In this context, Master Plans refer to large-scale conceptual designs or plans that incorporate many aspects of spatial planning for a new or existing community, such as housing, schools, medical facilities, public spaces and infrastructure. Architects Oscar and Louise both discussed the difficulty of designing when there was no user-client to consult. This was particularly the case with new-build Master

Plans with no existing community and Oscar noted the difficulty in trying to “best guess what would be beneficial to a new community who might not exist yet”. This echoes what has been found by other research, with architects having to anticipate the needs of the end-user while also accounting for the characteristics of the end-users “‘imagined’ by other participants and stakeholders in the design process” (Buse et al., 2017, p.1448). There are also problems with this imagining of the end-user, as it can “ultimately lead[] to stereotyping” of an imagined future population and a disregard for the diversity” of people (Lewis, 2015, p.210). Although these researchers were specifically discussing building design for older people in assisted living communities, the implications are highly relevant to schools as well. As noted by Lewis regarding older people, and transferrable to children, “a person’s date of birth is used as a proxy for their probable physical condition or financial situation” and this leads to an “over-assumption of similarity between people of the same age” (2015, p.210).

Speaking of a specific Master Plan project in which the community set to use the developed site did not yet exist, Oscar found particular challenges:

> *I just find that really disappointing, because it’s a really missed opportunity to really hone a school to the needs of the people who are going to be in it … there’s more schools being built where the people who are going to use them are not known and are not able to be consulted, and it becomes a different challenge.*
>
> *Oscar, Associate Architect*

However, Oscar and Louise also mentioned the success Master Plan projects could have incorporating community use into school buildings, because of the possibility of designing the wider environment to facilitate and encourage community cohesion. Hugh, the founding director of an architecture practice, noted that “on a previous project the primary school had become quite isolated, so they [the Design and Build contractor] wanted to bring it actually into the local centre” and so by literally changing the location of the school building they planned to make the school a community focal point. However, this sort of spatial planning is only possible when (re)designing large areas of a community (i.e. Master Plans) and the strategies used are not transferable to smaller scale or single school projects.

Terry, a Local Authority Commissioning Manager, echoed these sentiments, suggesting some of the school projects he had been involved with that had the most engaged and well-used community-use elements were those that were part of Master Plans. Despite this, Terry mentioned that in some projects in which community use was incorporated into the design, including where the sports hall was intended for out-of-hours community use, follow-up

showed it was simply not being used or implemented by the school community. He found that this was often due to, for example, the headteacher feeling “it’s just too awkward” to accommodate others in the space or because of safety concerns. Hence, as he explained, in the design of new schools “where there’s no school management in place and we’re setting up something from scratch then there is that huge potential” to have a variety of community elements incorporated but they are not necessarily going to be used and it is “very much on the school management at the time”.

Interviews with teachers provided some elaboration on Terry’s comments. While many teachers saw the benefits of community use, including Evan who noted that it can “kind of help[] the local community” by offering space at an affordable rate for community groups. Evan also mentioned that this can benefit the pupils if they are involved, because they can become more involved in the local community. Specifically talking about sports groups coming in to use the school facilities, Evan was pleased with this, as it meant the pupils could take sports classes that were not available directly through the school (specifically self-defence classes). However, there were also significant reservations from teachers, with Allegra noting that there is a “cost implication in terms of the staff”. Evan followed up on this suggesting that sometimes “it was a load of hassle” and so not worth the small amount of money that was charged. Evan mentioned that one outside group that used the school space for computing sessions did not tidy the room after themselves, and this caused problems with the school’s site staff. Nevertheless, it is possible for schools to benefit from the community use in other ways, for example, at Olivia’s school they rent the sports facilities to “football teams at the weekend” which can be used “as a selling point for the school”.

The benefits of community-use as discussed by school staff reinforces the potential benefits indicated by architects. Given that architects, and Terry as the LA commissioning manager, suggested that community-use was easier to incorporate into Master Plans, this may suggest a benefit to Master Plan projects. As suggested by Tritter and McCallum’s (2006), plans may need to include elements that are not agreed on by all stakeholder groups and sometimes it is difficult to separate people’s own personal biases in consultation. With Master Plans where the end-user consultation is inherently not possible, these stakeholder biases are not an opposition to including elements such as community use or environmentally sustainable practices. These are widely considered beneficial to the broader community, demonstrating that there may be some advantages to lack of end-user consultation. Although it is worth noting that, while end-users may bring bias based on their personal needs or preferences, the same is true of all other stakeholders including architects

themselves and noted in previous research (Buse et al., 2017; Lewis, 2015), and so Master Plan projects are not free from bias in the planning process.

Lack of consultation

There were clear difficulties faced by teachers as a result of a lack of consultation in some areas – for Olivia, this resulted in spaces that "just didn't work". In one instance, Olivia, who is an experienced English teacher, recalled an open-plan entry space in a new build school which "they did eventually put sliding glass on [] because… they realised it wasn't particularly safe". She also mentioned classroom spaces that did not "really allow for much movement", making group work difficult to facilitate. Headteacher Liam also talked about movement issues in relation to poorly designed circulation spaces, describing it as a "typical example of the ridiculous decisions made" in the design process. In particular, he mentioned "the width of the corridors… and a set of stairs" that are too narrow when "you've got 120 kids coming down the stairs, at the same time [as] you've got 120 kids going up those stairs". Liam felt the problem with these sorts of simple or basic issues is that the "architects think they know best, the DfE think they know best, but the reality is we live it". Liam's school Site Manager, Edith, echoed this sentiment and felt that the designers for government school building projects should "employ people that [have] been in school" so they understand the realities of the spaces.

Teachers from several different schools felt there was a lack of consultation, with Olivia stating that they "didn't have any input" at her school. There was some consensus on this, and Lauren, an experienced teacher now working at a Pupil Referral Unit (PRU) said that "at no point were we involved in any decision-making process" for the design of their new building. This resulted in difficulties with "small things… that you think why [did] they do this" and a "raised [] eyebrow at… some of the decisions" at Lauren's school. Many classroom staff mentioned such problems, including Alina, an Assistant Principal and science teacher, who felt that there were things that didn't "make sense", like oddly positioned boards which made "the screen situation[] a bit weird" in that the angle was not good for pupils to see it clearly from all parts of the room. Mia, a SEND teaching assistant, also raised the issue of the interactive boards in some of her newly designed classrooms. She explained that they were too high for younger (and therefore shorter) pupils to reach. This demonstrates on a basic level the need for spaces to be designed thoughtfully to ensure all pupils are able to participate (Long, 2019; Booth and Ainscow, 2002), with Mia and her colleagues having to make adjustments to their lessons and spaces in order to make them accessible for all

pupils. As a primary school, with the possibility of pupils from Key Stages 1 and 2 to be using the space, Mia found it frustrating that this had not been considered in the design. She noted that they had pupils “even in Year 6… [who] can’t reach over… to be able to draw on the board”. She felt that some of these issues were “little changes that don’t look massive until you’re actually working in the classroom” and then you realise that they actually make a big difference. Similarly, Olivia mentioned a previous new build school they had worked in with “a big pond outside… to make it look impressive” but “obviously everyone pointed out straight away that that might not be particularly sensible”. Ultimately, the pond “got fenced off” but Olivia commented that its presence in the first place showed that the school had been designed by “someone who didn’t really work with teenagers day-in, day-out”.

Notably, architect Ionna, who was founding director of an established practice, was the only architect participant to specifically discuss the lack of consultation they perceived as being carried out for government-funded school building projects. Ionna was consistently critical of government school building approaches and programmes, after the end of the Building Schools for the Future scheme in 2010, and stopped working on English government-funded school building projects as a result. She described feeling that “it became really about hang on a minute, we’ve got a failing school stock, and we need to replace it, and none of the consultation” was important. Although, this contrasts with the experiences described by many other architect participants, it does offer a more similar account to that of the teachers interviewed, many of whom felt completely uninvolved in the design process.

Specialist subjects

In addition, teachers of practical subjects raised concerns with how their rooms were designed and functioned to deliver the practical elements of their curriculum. For example, Allegra, Head of Physics, was “more concerned that [her] room functions well for practicals … than with making some kind of more collaborative space”. She commented that in some of her science classrooms, it feels “like they don’t consider a scientist or a science teacher when they’re designing these things”. The issues found by teachers of practical subjects indicate a lack of consultation with subject-specific experts in the design process, sometimes prioritising aesthetics over function. A specific example Allegra noted was that there were large windows in the ceiling of her classroom the windows in her classroom, which did not have blinds because of their height (see Figure 2 below).

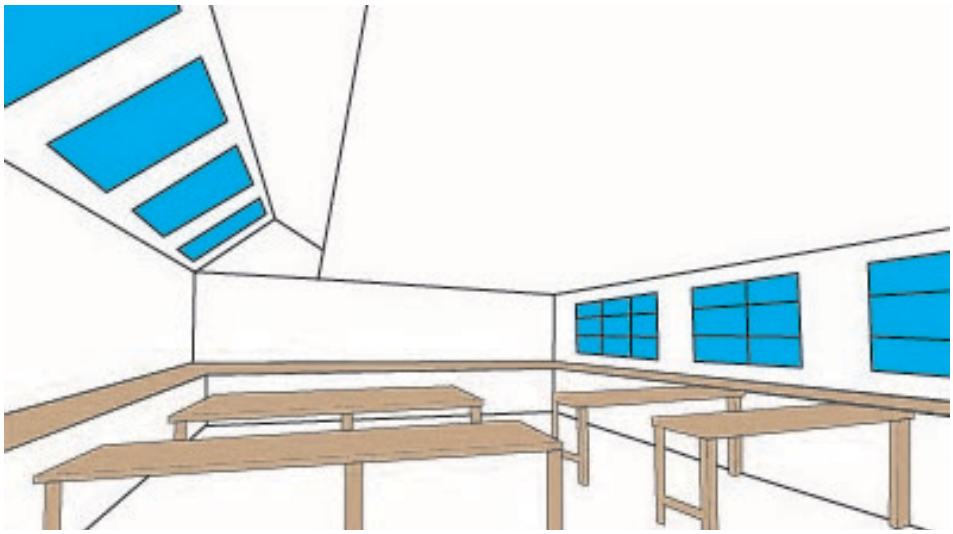

Figure 2: Impression of science classroom - Teacher Allegra

While Allegra noted that the windows were would have been pleasant in a non-science classroom, they did not work in a Physics classroom:

> *Whoever designed them designed them with these lovely windows with light in mind, and the thing is it just completely knocks on the head all optics, and you study optics every single year, for all six years, so you know, that's no good.*
>
> *Allegra, Head of Physics*

Allegra's school eventually "painted the windows" in the ceiling with blackout paint because although "they're absolutely lovely… it's a science room used for physics, and it needs to be absolutely pitch-black at times" in order to teach specific parts of the Physics curriculum. This is a strong example of where particular subject-specific teaching knowledge is required in order for a space to be designed in a practically usable way, as an architect or contractor would not be aware that this was a non-negotiable element of a Physics classroom's design. In practice, the schools implemented a solution and altered the space to meet their needs, which demonstrates a practical application of interpretive flexibility (Gieryn, 2002).

Alina, also a Science teacher and a Deputy Principal, raised another subject-specific issue – her school did not have enough subject-specific rooms. The design team for her school had "only planned for one art room, but when you timetable… at Key Stage 4 you tend to have options, so you'll have two art classes at the same time". In practice, this

means utilising a non-art classroom and Alina indicated that eventually they may convert another room into a second art room to provide appropriate space.

There were also two notable examples of subject specific difficulties from the Headteacher Liam. Liam commented when in one of the IT rooms that “for a computer room, the best thing you can do is have computers all the way around the outside, because then you can see the screens all the way through”. However, their computer rooms had been designed with computers “down the centre and computers around the outside” (see Figure 3 below). Interestingly, he pointed out that although the teacher cannot see the computer screens of those sitting in the middle bank of computers and so “that’s a crap design… it works for us because we’ve got good kids”. He noted that in previous schools he had worked in with pupils with more challenging behaviour, “well, kids [won’t do] the work” if the teacher cannot see their screen. In this instance, the school had not had to retrofit the space, because the academically selective nature of the school intake meant that the pupils could generally be trusted to do the work without constant supervision. However, as pointed out by Liam, many schools would have had to alter the space because if the pupils know their teacher cannot see their screen, then they are likely to not do the work, which relates to the behavioural impact of surveillance (Hope, 2013; Foucault, 1977).

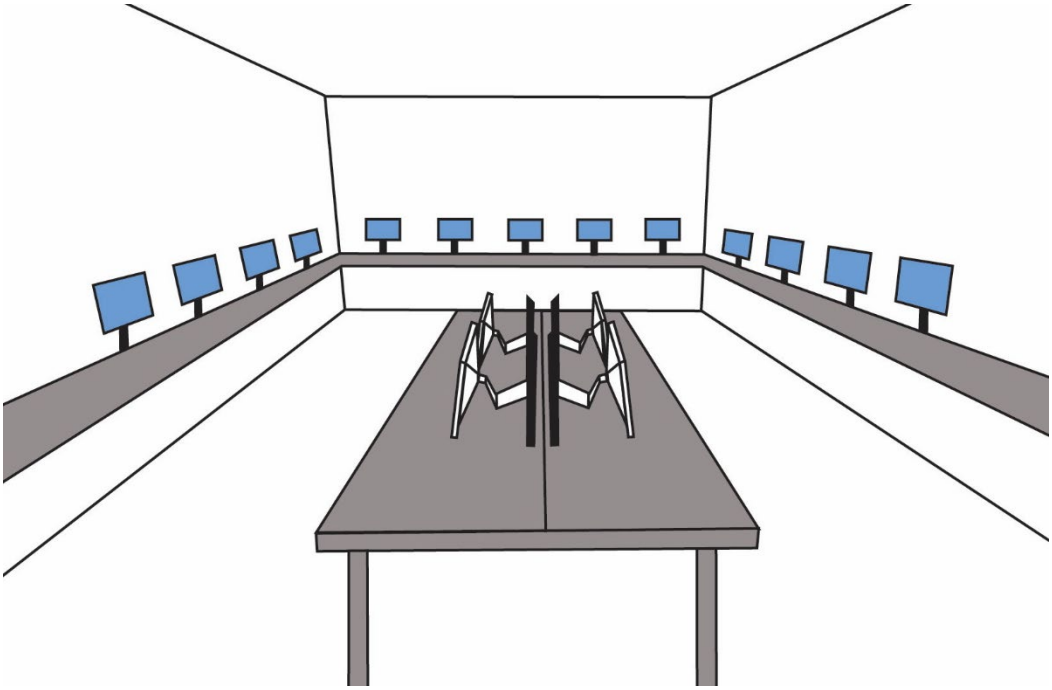

Figure 3: Impression of IT Classroom - Headteacher Liam

Further to this, Liam discussed at length an issue with a science classroom within the school's new building. Although well-equipped and of a good size, there was a "big issue [with] the columns in the centre" (see Figure 4 below). At first glance, the columns – which run to the ceiling from the top of waist height pillars providing gas and electricity supplies for practical work – seem a useful way of providing practical equipment "scattered… around the room in what looks like a reasonable way". However, when showing me around this classroom during our walking interview, Liam demonstrated that the layout was not practical:

> ***Liam**: "the reality is… wherever you sit… Can you read the whiteboard right now?"*
>
> ***Interviewer**: "No"*

As for the consultation on this particular space, there was some disagreement about how much the teachers had been consulted. Liam's interpretation was that "the plans were put forward, taken to the science department, it was protested [but] basically happened anyway". On the other hand, Edith's perspective as the site manager was that, although "the science teachers were asked for input", they had not fully grasped the concept of the plans and so did not realise "that the posts that they're [now] moaning about were on the drawing". Edith commented that even she "wouldn't have been able to see from the drawings" the way in which the posts impeded on the room as "it wasn't obvious". She felt this was because the architectural drawings provided throughout the consultation were quite technical. Edith explained that "if it had been a picture" or, with more modern developments, a 3D image or virtual reality experience, then those being consulted would have been able to visualise the space more clearly without having the trained knowledge of an architect or designer to interpret the technical drawings.

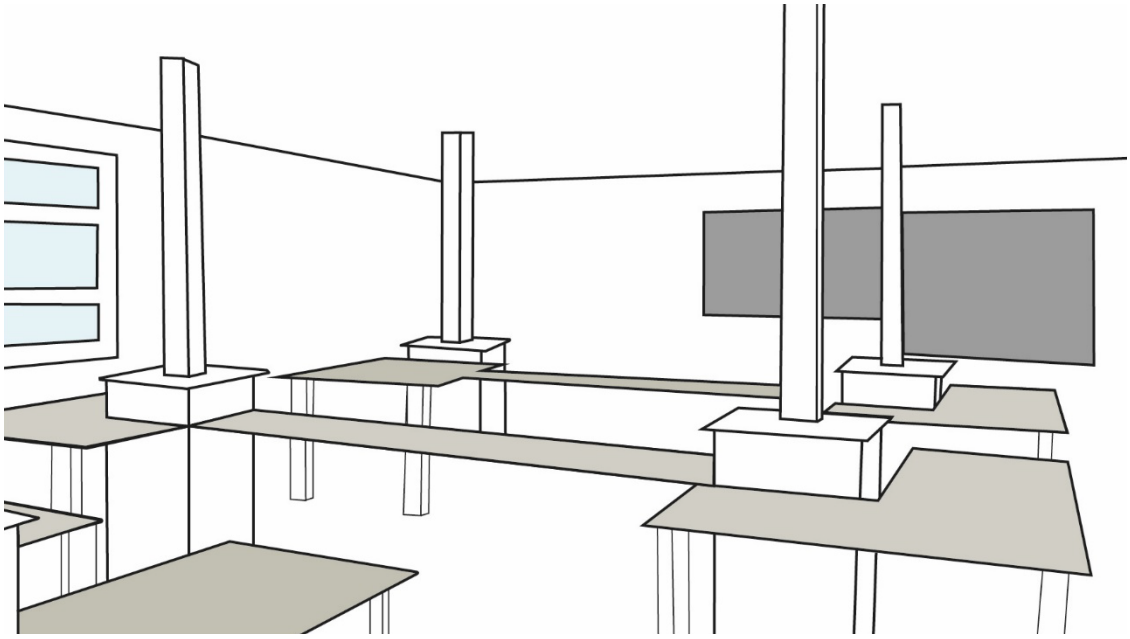

Figure 4: Impression of science classroom - Headteacher Liam

This issue has been raised in previous research, and there was a consensus in the research of Buse et al that part of the architect's role was communication as "some stakeholders find it difficult to interpret architectural drawings and plans" (2018, p.3). Although many researchers also note the importance of architectural drawings in the design process, particularly from the perspective of architecture as a creative profession, in which numerous iterations are created and tweaked before a final design is considered satisfactory by the creator (Burch, 2014; Groleau et al., 2012; Frascari, Hale and Starkey (Eds), 2008).

Post-occupancy

Other difficulties faced by schools due to a lack of consultation can include issues with the "technical bits", with schools saying "we can't control the heating, or the lighting's really bad", as noted by Local Authority Commissioning Manager Terry. However, unlike the layout of classrooms or the design of the entrance foyer, these issues may be less a problem with the initial design and more an issue of a lack of follow-up support. Terry found that "quite often we have to go back to schools and fix something that didn't work" and "the big team that arrived when we built the new school… they've all gone, and we're just picking up the bits". This resonates with the experience of some architects, who found that after the initial 12-month defects liability period, there was limited contact with the schools and so they had minimal ability to offer ongoing support.

Experienced architect Oscar felt “being available and trying to help when things aren’t quite right” was important, specifically referring to being available via phone or email, for the schools (generally head teachers) to get help with minor issues and teething problems with systems. However, Oscar also noted that this informal post-occupancy evaluation (POE), feedback and support was often instead of “proper RIBA Stage 7” formal POE, and one of the main problems identified with carrying out formal POE was the financial burden. This was a point raised by several architects including Oscar and Louise:

> *Often clients don’t pay for it, they’re not interested… Either not interested in having it done, or they’re not interested in paying for it to be done.*
>
> *Oscar, Associate Architect*
>
> *I think the question often is who’s paying for that. Because once you’ve completed the project, in theory that client has stopped paying you, and unless they’re a repeat client where you’re doing lots of work for them, and therefore the feedback you can gain from that project can feed directly into something else that you’re doing for them, they’re unlikely to want to pay for that, which is fair enough.*
>
> *Louise, Architect*

This lack of formal POE or ongoing support can be problematic when schools are designed with sustainable or highly technical features requiring significant ongoing effort to maintain. Nonetheless, in line with Oscar’s view, Hay et al’s research noted that “even light touch POE is ‘better than nothing’” (2018, p.704). However, even light touch or informal POE, as described by Oscar, was becoming increasingly difficult according to the experience of some architects. Ionna, Founding Director of an international practice, felt it had become more difficult to maintain “that very close relationship with the people using the building” because of the changing nature of the way in which school buildings are funded. Ionna felt this was particularly the case in relation to the prevalence of architects working under Design and Build contractors, or the local authority being the client rather than the school. The latter point made by Ionna lines up with the experience of Terry, who explained that the local authority was left “picking up the bits” as discussed above. Ionna’s concerns around this, though, explore a different perspective – that it is difficult for architects to take on this POE role when they have little to no direct contact with the end-users, but are working via local authorities.

A related issue was raised by another experienced architect, Tim, who explained that some of his projects completed under the ‘basic needs’ funding sometimes ended up with very high “running costs or the ventilation systems don’t work”. In Tim’s experience, these schools (or local authorities) do not get the design team in to review these issues, instead “they get someone else in to tinker with it and tinker with the settings, and they’re not perhaps understanding, or they just turn it off,” which causes ongoing issues and stops the building functioning efficiently. This sentiment was echoed by School Site Manager Edith, who mentioned that “they put a lot of things in that were brilliant, so for example… electric doors… and underfloor heating but didn’t give much of a handover on how to maintain it”. Edith explained how this created difficulty, partly because of the semi-rural location of this particular school, as the “local tradesman… have never seen some of the stuff” and so finding people to provide maintenance was challenging. She went on to say that the contractors left the school with “22 manuals for how everything works” without providing support or ongoing maintenance.

In many of the examples given by classroom staff of their spaces not working for them, they had made, or intended to make, changes. This was even the case for newly built or remodelled classrooms, which could be picked up if POE had taken place, as part of a ‘lessons learned’ visit (Hay et al., 2018). For example, as mentioned above, Alina’s new school would have to find a space to convert into a second art classroom in the future, which would in turn take away space from another subject/department. Given that her school’s wider Academy Trust is likely to commission other school buildings in the future, it could have been beneficial for this type of issue to be noted as part of a POE process, for future reference. In some cases, teachers’ issues and comments were taken on board during the building process, which was a useful and ongoing process of feeding back and tweaking. For example, due the ongoing renovation of Mia’s school, they were able to feed back to the contractors that the boards were too high for the children (as discussed above). The designs were “then edited” for the classrooms yet to be renovated. While this type of ongoing evaluation and dialogue is useful, Mia was frustrated that this would not help for some of the school, because around half the renovated classrooms would have boards that were too high for many of the pupils to access.

The experiences shared by participants, both architects and school staff, demonstrates particularly low levels of stakeholder consultation or engagement once the building has been handed over. Architects often felt this was due to lack of funding, as well as potentially a lack of communication between the design team and the stakeholders (on both sides). This is further evidence of the need for strong stakeholder engagement and continued involvement,

as this would help the users to understand how the building was designed and why and thus be more capable of its ongoing maintenance and functioning.

4.2 Tokenism: We were shown plans at various points

Many remarks and examples described by architects demonstrated a commitment, and often requirement, to consult stakeholders, although the ways in which they described doing this were sometimes superficial. This could be through community engagement events, where architects and contractors invite parents and communities into schools to show them plans and talk to them, or through the planning process, where objections and supporting statements are collected as a matter of course. Lauren, a teacher at a PRU, explained how they "were shown plans at various points" when their new building was in the design stage. She indicated that there was some engagement but little allowance for input from school staff. Rather, they were informed of what the plans were and could ask questions or have input on minor details, for example the paint colour.

This sort of engagement was sometimes discussed by architects as necessary. This was particularly stressed in relation to their engagement with children, based on the attitude that children do not know what is practically possible or affordable and so cannot have influence over the substantive design elements. Architects most frequently discussed a tokenistic level of engagement as undesirable but sometimes necessary due to the constraints of time, money and stakeholder knowledge.

However, this type of engagement was the most common experience described by teachers and school staff, with many participants echoing Lauren's experience. School staff often referred to an (executive) head or business manager as having a say in the design but no other staff being involved or being shown plans, reflecting previous research that has found a variety of end-users are left out of the design process (Buse, Martin and Nettleton, 2018). School staff did mention choice and involvement in elements such as furniture, although not always. This level of engagement and participation is largely tokenistic and akin to Arnstein's *Information* and *Consultation* ladder rungs (see Figure 1).

Information-sharing

From the perspective of architects, they often felt there were difficulties engaging pupils. Oscar explained that, in his experience, consultation with pupils "tends to be limited to

certain areas [like outdoor spaces], because… we don't really have a say over how big the classrooms are, or whether you're able to use a slide to get out of the classroom to the playground". The assumption he is making here is that pupils would likely have comments on factors that were pre-determined or subject to specific regulations. However, as noted by many researchers, pupils and children generally do have valuable and practical insights, including through the use of direct consultation and observation (Newman and Thomas, 2008; Burke and Grosvenor, 2003). Senior architect Oliver confirmed that pupils do not get involved in the design to any "great extent unfortunately" but he indicated a desire to involve pupils in some way. Tim, Partner at a large UK-based practice, described how they would set-up public consultation events in the pre-planning stage and "you'd get some pupils come along to that, so you'd engage with the pupils at that event really" but "generally [you] don't get too much consultation with the pupils".

Similarly, consultation with parents and the wider community was often described in a tokenistic way, although Oliver was keen to explain that this sort of engagement does have "some value for the community, not just for just telling them what's about to get built". Tim described public consultation and engagement events as often being about "present[ing] the scheme" and Oliver talked about them being "a chance for the local community to come in and have a say". Whilst many architects noted that these events were not entirely pointless, many also realised that they were not always effective at, or even designed for, getting genuine feedback from stakeholders. Specifically referring to one Design and Build contractor he had worked with, Oliver explained that "some view it as really an exhibition rather than a consultation, and they phrase it that way, as if they do not necessarily want the feedback, because then it means we've got to revise the scheme". Along similar lines, Headteacher Liam felt that often these sorts of community consultations can be tokenistic. For example, he had attended a consultation where there were "five, six hundred people at the consultation protesting it" but then there were "50 people at a different consultation that were for it, and they listened to the 50 because that was consultation". He felt the contractor in this instance had used the consultation to gain positive comments and input, while actively ignoring the higher number of negative comments. Although this was in reference to a specific construction project, Liam felt this was a widespread approach to consultation in the construction industry, and whether true or not the impression it left was clear – for Liam, consultation was often just for appearance.

Offering some perspective to this type of experience, Tim expressed disappointment that he was unable "to actually take on a huge amount of input from the local community into the design itself". For Tim, the reality is that "it kind of has to be a fairly limited input into the design itself, because the design is already there, so you're hoping you present something

that everyone likes". He did go on to explain in more detail that if there is "a real concerted thing that we need to change" then there is a "chance to feed back". Hence, he still felt the engagement events are important as they do offer some opportunity for community input which will be taken onboard if a significant problem is identified. Fiona, Associate Director of a large UK-based practice, also described this type of community consultation and engagement. She explained that "it is mandatory [for contractors], it is expected of them to keep the neighbourhood engaged". Again, in Fiona's experience this was limited to "regular newsletter drops…. an open day" and other such information-based engagement, with limited availability for feedback to influence the design. As experienced architect Alex put it, "it's nice to feel part of it, isn't it, even if it's only perhaps a gesture".

In a more positive exploration of this type of engagement, Iain, Director of a UK-based practice, described using modern methods of engaging with parents and pupils, including the use of virtual reality (VR):

> *We do consultation with the parents. VR has been great for that, virtual reality, taking parents through the building has been awesome. But that's often a wow experience rather than a negative one, they really appreciate that.*
>
> *Iain, Practice Director*

Along with the use of "3D models and visualisations", these methods of "sharing what we were doing, how we were doing it and what they were gonna end up with" are similar to the open days and community engagement discussed by other participants. However, as Iain noted, they may elicit a more positive reaction and a greater feeling among participants that they know what is happening because of the immersive nature of virtual reality. This alternative format can increase the ability of a lay person to understand the design being presented to them, when compared with 2D architect drawings or technical construction specifications. As mentioned above, this may relate to the difficulty of non-architects in interpreting architectural drawings (Buse, Martin and Nettleton, 2018), alongside the novelty of such modern methods. Although this may lead to a greater sense of involvement, it may still be used as a tokenistic means of engagement, as there is very little room for movement in the design once an elaborate, and possibly expensive, 3D model or VR experience has been created. Additionally, Iain mentioned that the 3D and VR methods are still relatively new in their use with stakeholders, so although he felt this is the direction the sector is heading in, the use of these methods is not widespread due to cost and the need for user training/knowledge. Nonetheless, as demonstrated by the example of pillars in the science classroom of the case study school, as discussed in Chapter 4.1, the use of 3D model or VR

may allow lay participants to understand the design being proposed and raise any critical issues before the point of construction, reducing the need for adjustment during the construction process or making costly changes after the fact. As noted in Groleau et al's research, the use of computerised methods can also allow for a higher number of visuals to be created in a short space of time (2012). Therefore, if used for a prolonged period and across a range of projects, the software and associated training costs could ultimately be recouped, and these methods could lead to cost and time savings.

Creative Methods with Children

The various methods used for participation and engagement discussed by architects often demonstrated a commitment to shared decision-making and education and knowledge sharing. The most significant examples of thoughtful methods of engagement came through in discussions of engagement with children, often involving creative or artistic methods to allow children to participate. Creative and visual methods are often deemed particularly useful with children to elicit their views in and allow them to articulate their views in age-appropriate ways (Woolner et al., 2010). Whilst in some instances (detailed above) these opportunities for children's participation were token gestures with no consideration taken of the outcome of these exercises, some architects endeavoured to incorporate the views of the children into the design.

Architect participants described using a variety of specific methods for gaining the views of children. In one project, practice Director and experienced architect, Hugh, had developed "[a] collage exercise [where] we had black and white images of the existing school… [and worked] with the pupils asking them how they'd see the future school". As part of a project architect Louise was involved in, her team had been particularly creative and designed "a boardgame which encouraged the students to think about the things they wanted to see in the school". The use of these types of visual and creative methods was seen by Hugh to work "really well, because we had the conversation, but also had this output with these images" which were used to support the design. This use of creative methods with children is supported by many theorists in their models of participation (Tritter and McCallum, 2006; Shier, 2001; Hart, 1997, 1992).

However, discussions with school staff did not demonstrate the involvement of pupils in any design processes, with no mention of the inclusion of children in the design process during any interviews with teachers or school staff. This lack of consultation with children, which was the reality experienced by school staff interviewed, is echoed in research into

other ‘vulnerable’ groups, including Buse et al’s research into care home design, who found that those with dementia “were sometimes described as too ‘difficult’ to consult with” by architects and contractors (2017, p.1443). This also relates to Van der Linden, Dong and Heylighen’s work, in which architects “often mention the importance of having a ‘good client’, which seems to refer to knowledgeable parties, who have figured out what they want and are easy to collaborate with” (2017, p.2). When considered alongside educational theories and approaches to inclusion and participation in learning (see Long, 2019; Booth and Ainscow, 2002), this lack of participation of pupils in the design of their school buildings could clearly have effects on their participation in their learning within those buildings. Where school buildings have been designed without the input of the pupils who learn in them, this could then impact the extent to which pupils engage with the space and the appropriateness of the space for pupils’ needs. As with research involving buildings for other ‘vulnerable’ groups, this lack of participatory design with pupils (as was the experience of most participants) could result in buildings designed to meet the anticipated or assumed needs of pupils as end users, as opposed to their needs as defined by themselves (Buse et al., 2017; Lewis 2015).

Gatekeeping

When referring to school staff engagement, teaching staff and architects both described the involvement of business managers, bursars and headteachers in the design process to varying degrees. In reference to the design of new buildings, many teachers felt there was consultation with some senior staff, but little with teachers. Lauren, teacher at a PRU, noted that “the head, the school business manager [were involved]” but she felt that nobody “else had a say as such”. Similarly, Deputy Principal Alina mentioned that “there was consultation with the executive principal” but not with the rest of the staff.

Headteacher Liam and Site Manager Edith, whose school had received PSBP funding for a new sports block, also both indicated that the former head had oversight of the consultation process for the new school building. So, as Edith pointed out, although “various people were asked for input” it was all controlled by the head who “would have the meeting and then go away and talk to the teachers and then relay back”. Edith was not especially critical of the former head and the design of the new sports block, and she also felt that Liam (the current head) was well-placed to navigate the design process because he is “very practical… he teaches woodwork for a start… so he gets the maintenance, he gets the practicalities”. However, she felt that generally this approach of gatekeeping by the head could cause a “problem”, as “a lot of heads… don’t” understand the processes and factors in

the design. She felt that although Liam was able to navigate the design process, because of his specific subject specialism and previous experience, most heads would not have that ability and yet they still generally act as gatekeepers in the design process.

Architects generally presented a conflicting view on this type of gatekeeping. Iain found this approach helpful, with the head acting as a go-between, and often found he worked with "some bursars who… love to manage their staff, take all the important bits, shut down the bits that are less helpful or unaffordable… and just take the best bits and then pass them on to us, which is great". Similarly, Oliver described having regular contact with "key people from the school itself… the head, the business manager, something like that". Through regular meetings, Oliver would aim to "get their feedback… and hopefully pick up on everything that they've brought up" in order to produce a final design. Iain also found this an efficient and effective way to get the input of school staff, utilising the headteacher and/or bursar as effectively the project manager, reducing the workload burden on the architects. Although Iain would ensure participation with teachers if the headteacher or bursar did not want to lead on it, he found they would have to navigate difficulties of managing expectations among staff. He explained that, from his perspective, "you get some brilliant teachers who are really pragmatic, understand the constraints and can just give you the information that you need" but he had also come across "others who have different expectations"

A similar sentiment was expressed by architect Louise, who felt that people "get hung up on the small details," which can add difficulty for the architect in ascertaining what elements are important. Architecture practice Director Tim explained that, given the time and funding constraints, it all comes back to cost and they are "constrained by cost and programming requirements really… which limits what [schools] can have". This is reflective of wider research, which has explored how the creative process of architects can be at odds with the organisational requirements of the construction industry. Yaneva describes these as two rhythms which "were never fine-tuned together" with the architect being concerned with "the quality of the end product" and the latter more concerned with delays and potential budget increases (2016, p.56). These limitations ranging from space regulations (DfE, 2015; DfE, 2014a) to time and cost, were usually stated as the reason for architects not being able to follow the design feedback from school staff, along with more practical considerations of building regulations and safety.

Along with headteachers and bursars, local authorities also acted as gatekeepers for some architects. Architect Oliver recounted an example in which "the council wanted to control [it] themselves… we weren't really speaking to school". This led to difficulties when "halfway through the project [the local council] almost realised that [the architect speaking directly with the school] would be a good idea". Although the architects then worked to

“change the project quite a lot to actually take on board input from the school itself”, Oliver was keen to point out that it “obviously would have been better [to have been in direct contact with the school] from the start” rather than having to change an existing design. Similarly, architect Tim also shared an example of a county council, who was in this case the funder, who put together a brief for a school expansion without consulting the school. The architects were tasked with having “a couple of stakeholder engagement meetings with the school, just to get their take on the brief” but there was little movement within the design for the school’s input. Tim explained that, in his experience, “quite often [the council plan] actually varies from what the school wants” and the schools have limited capacity to “negotiate why they want something different”.

The experiences of both school staff and architects demonstrate an amount of gatekeeping, particularly by headteachers and bursars or site managers who, in participants’ experiences, tended to have greater involvement in the consultation process or more direct contact with architects than any other school staff. Teachers who mentioned their headteacher being involved in the design process all felt that they had not been consulted, either by their head or the architect/contractors. Although, as teacher Lauren pointed out, “there was stuff in terms of what went inside it… the overall building was already decided” leaving staff feeling that they had little say over their classroom spaces. In contrast, some architects felt this approach was an efficient and practical way of engaging school staff – something which all architects felt was important.

4.3 Social learning: Educating people to what’s possible

The most engaged form of participation presented by participants is closely related to Collins and Ison’s ideas (2006) about the process of participation, the learning that comes from that and the compromises and collaborative decisions then made. Architects often used the language of teaching and experienced architect and practice Director Hugh referred specifically to “educating people to what’s possible”. This goes beyond the Department for Education and RIBA requirements for engagement, which equate to consultation and information-sharing rather than highly participatory stakeholder engagement. This is more akin to engagement that falls on the higher end of the ladder(s) of participation (Connor, 1988; Arnstein, 1969), and involves educating the stakeholders so that they are able to make decisions about the design of their school buildings and have real power to affect change to the final design and resulting building. The role of the architect as educator was also explored by participants in the *Buildings in the Making* project, with interviewees viewing

a significant part of the role as “translating specialist knowledge” (Buse, Martin and Nettleton, 2018, p.3). Researchers have noted, though, that this can be a two-way knowledge exchange, in the most successful architect-client relationships and this is where genuine collaboration can occur (Van der Linden, Dong and Heylighen, 2017).

Although not in line with Arnstein’s highest rung (1969), the complexity and regulatory requirements involved in school building design and construction would not lend itself to full ‘citizen control’ as indicated by the work of Tritter and McCallum (2006). Notably, this type of participation is discussed by several architects, but was not apparent in discussions with school staff.

Shared decision-making

The importance participants placed on this engagement and consultation was clear, with a general consensus that this process was, and should be, about discussion, compromise and collaboration. Many architects positioned themselves as a facilitator in these discussions, offering suggestions or counterpoints. Practice Director Ionna talked about allowing the stakeholders to be “listened to and involved”. Similarly, as Oscar noted, “our role as architects in those situations is to try and ensure that those people have a voice and that they can effect change”. The comments made by both Ionna and Oscar reflect an aim of sharing decision-making and power, on a foundation of education and knowledge, as opposed to previously discussed notions of tokenistic involvement. Depending on the resources available to the architects and the schools/stakeholders, participants discussed different ways of achieving this engagement. For example, practice Director Hugh talked about a “meeting of minds,” referring to architects and school staff sharing knowledge and ideas. This is particularly close to the language used by Van der Linden, Dong and Heylighen, who note that “knowledge exchange [can]… allow for the building [of] a shared frame of reference” and shared expectations (2017, p.6).

Another similar example came from Ionna, who had often shown school staff examples of what other schools had done, including site visits in some cases, to let them see the possibilities in practice and make informed decisions. However, Ionna expressed strongly that “you need to also be propositional; you need to suggest or show precedence about [how] you could do this or you could do that” because “it’s quite difficult to imagine yourself in a space and not [know] what that’s gonna be like”. Other architects expressed similar sentiments, and Hugh felt that by offering up sometimes radical suggestions, architects could help “teachers that are conditioned by their environment [to] open up and think ah,

there is something out there, there is somewhere better than our crappy little school". This was also found in care home-based research, with architects feeling that this idea of "challenging assumptions" about what a building could be was a significant part of their role (Buse, Martin and Nettleton, 2018, p.3). This is also evocative of the education stage of Arnstein's ladder of participation (1969) and Connor's 'New Ladder' (1988) that followed Arnstein's work. As noted by Hugh, while school staff may be resistant at first, they may then go on to think "we could be like this and we could have that, why can't we have all of these things". Similarly, speaking generally about clients not only schools, Ionna felt that by "taking people on visits or putting them in contact with people who've experienced the kind of things we're talking about," schools and user-clients were able to achieve a finished product that all stakeholders felt was highly successful and would not have been possible without stakeholder engagement and consultation.

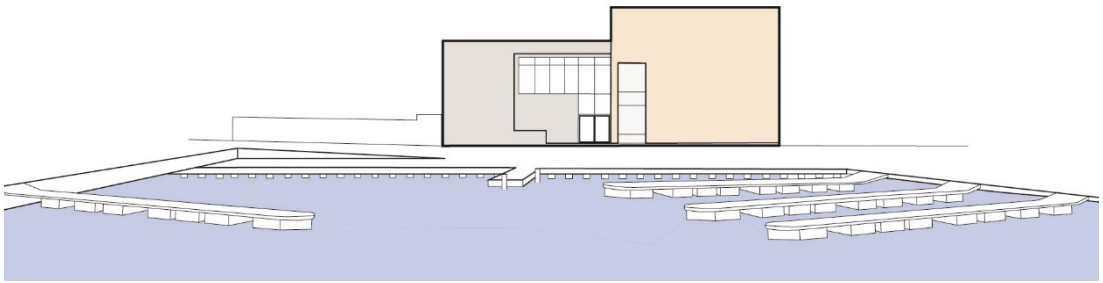

Figure 5: Impression of school on canal - Architect Ionna

Discussing one particular school project, Ionna noted that sometimes the end-users are the ones who push the boundaries. In a new build of an existing school, Ionna reported that her team worked in collaboration with the stakeholders to create a mutually designed space through co-design. She specifically described how they were focused on "trying to transform the internal and external environment, in the most positive way" but only within the boundaries of "what the school wants". The site for the new building was adjacent to a culturally significant local watercourse, which posed challenges as well as opportunities for a bespoke design. As seen in Figure 5 above, the ultimate design sits in comfortably in its landscape, in harmony with the landmark watercourse.

> *It was the parents who said of course it needs to be that option there, which is on the canal. And we said but what about the safety? They said hang on a minute, we live with the canal coming through our village, this is part of our DNA. And it was the best thing we ever did… Thank goodness, thank goodness we consulted, because there was a lot that would have*

> *said hang on a minute, that's maybe a bit of a risk, you don't really want to do that.*
>
> *Ionna, Practice Founding Director*

As well as working to provide what a school has asked for, as above, Ionna also noted that her standpoint was that, in cases where the school say "they don't [want that]" then "we've just gotta say OK, that's fine". This was, for Ionna, the only way to achieve genuine collaboration and shared decision-making with stakeholders, which she felt was the best way to achieve outcomes that were welcomed by the community and the clients. Ionna's approach is congruent with journalist Veronica Simpson's explorations of engagement in design – by educating and engaging stakeholders this effectively "supports a move away from a 'risk averse', formulaic approach to design and facilitates the creation of innovative buildings" (2015) and this allows a 'risky' design to be implemented. The idea of being propositional is also in line with many models for citizen participation which consider complex or contentious situations, and multiple stakeholder groups, particularly Collins and Ison's discussion of social learning (2006). The position Ionna held, of co-creation in order to achieve the best outcome, is also one espoused by researchers Imrie and Street, who propose that "'creativity' is not the preserve of any one individual, or reducible to singular acts of genius, but is part of co-constituted relationships" (2011, p.101).

Whilst the above example shows Ionna's clear intention to co-create the design in this case, school staff interviewed based at other schools did not experience this type of engagement and involvement. In her large academy trust, Alina commented that "there was consultation with the executive principal" and in her Pupil Referral Unit, Lauren felt that those who "had a say" were limited to "the head [and] the school business manager". This perhaps indicates that this type of engagement is not as widespread as architects intend or believe it to be, or indeed that senior leaders act as gatekeepers in controlling the process of consultation as previously mentioned. There were mixed feelings, from both teachers and architects, about the effectiveness of the head/business manager having the only substantive input in the design process from the school side, as discussed above.

Early engagement

For some architects, ensuring this level of stakeholder engagement and involvement meant starting from the earliest opportunity. This is commensurate with the RIBA Plan of Work expectations for architects across all building projects (RIBA, 2020) and goes beyond

the explicit requirements of the DfE (DfES, 2014a, 2014b). For architect Fiona, this meant a series of back and forth conversations between architects and stakeholders with “an initial idea [being] put on the table, and then the school will look at it and review it and say what works for them and what doesn’t work for them”. This specifically includes lots of engagement and discussions with school staff in the early stages, pre-planning application – usually completed at the end of RIBA Stage 3 (RIBA, 2020), as explained by Oscar:

> *[In] the early stages there were meetings every two weeks I think, for about at least two terms, two half terms that is, and then slightly less frequent after planning … the to and fro is as frequent as we can make it really, but tends to trail off after RIBA Stage 3.*
>
> *Oscar, Associate Architect*

Other architects were also keen to begin consultation and engagement at the earliest possible stages, and for Hugh this sometimes meant “before we actually put pen to paper and started on the design process”. Hugh felt that although the “tendency is to start designing things immediately”, by beginning the process with consultation and engagement before any designs had been initiated, his practice was able to use “the ideas of what we’d learn to then inform the approach to the school”. He felt that this resulted in designs that better reflected the needs of the stakeholders. To an extent, this description reflects a genuinely participatory approach to the consultation and engagement process, in which stakeholders have some power to affect changes to the design – or rather, there is not a design in place so there was not a need for changes, instead ideas were brought to the table and included from the start of the design process. As well as Hugh’s feelings that this created a design that was more suited to the needs of the client, there is also evidence that this approach has financial benefits. As mentioned by some of Groleau et al’s participants, the time and cost of creating design drawings can be prohibitive and so architects may prefer, financially, to create fewer iterations of the design (2012). This can result in architects being unwilling or unable to make alterations based on stakeholder feedback. However, by integrating the input of stakeholders from the beginning, their input can instead be used to save time and resources by producing more satisfactory initial designs.

Fiona shared Hugh’s viewpoint and explained that by consulting with stakeholders and user-clients early in the design process, “when the end product is given to the school, hopefully they feel part of it and they own it and they have steered the conversations so that they get what they wanted in the end” rather than accepting a design that was presented to them. Louise was also keen to point out that her practice has “an approach which is

engagement-led" and this was key for all their projects, "regardless of whether it's an education project, a community project, a housing project". She mentioned that they "would always look to do that engagement first" and her practice's stance was that this resulted in better outcomes.

There is clearly more power being given to the stakeholder when engagement begins as early as possible, even before a concept design has been put together. This affords the opportunity for the needs and views of the end-users and other stakeholders to be implemented, or considered, more thoroughly and have a more significant impact on the design. Due to funding and time constraints, if stakeholders are not consulted until later in the process, it is inevitable that there will be a limited number of changes that can be made to any existing substantive design or plan. This has also been found in other research, with Buse et al finding that "consultation can be left too late in the process, limiting potential for users to shape the design" (2018, p.3). Hence, this approach of consulting early represents the most significant forms of stakeholder engagement discussed by architects.

4.4 Conclusions

Stakeholder engagement was seen by all participants as an important element of the design process in schools, and indeed in all building projects when it came to architects. However, there were a variety of actual experiences of how much stakeholder involvement was carried out, both from the perspective of architects and school staff. The huge importance placed on these stakeholder consultations and interactions by most of the architects who were interviewed shows that it is regarded as a significant element of the design process. Whilst the RIBA Plan of Work (2020) does indicate engagement with stakeholders should take place throughout stages 0–2, the data collected shows that this importance is amplified by the individuals involved. Many of the architects interviewed placed stakeholder engagement and consultation towards the top of their priorities, even stating that the end result would not be successful in their view without such consultation. This goes beyond the expectations of RIBA and government guidelines, demonstrating its importance to interviewees. Nonetheless, the experience of school staff indicates that the levels of consultation and engagement espoused by many architects may not have been commensurate with the practice being undertaken in many school building projects. Alternatively, in some cases it was clear from school staff that Senior Leaders (headteachers, business managers) had been involved in the building design process and had often not involved the wider school staff thus gatekeeping the design process.

Engagement extended to POE for several architects, although there were many who found this element challenging to accomplish. Similarly, building community-use elements into projects was idealised but often seen as impossible given the guidance for safeguarding. The data collected suggest that both of these elements, although seen as particularly important by architects, were seen to lack any substantial government funding as part of school building projects, with architects often expressing frustration at this situation. School staff mentioned forms of POE occasionally, seeing them as a positive step to rectifying any impractical design elements moving forward – either for the next school in a trust or for the next phase of their own school building.

Although, in relation to Arnstein and other authors' ladders or models of participation, there was no indication from participants of the 'highest' level of participation – full citizen control – it is important to consider the complexities of school building design and the limitations of government guidance and the planning system. There is a limit to going beyond shared decision-making (to complete control) because of the specialised nature of building design, the requirement to get designs through planning applications, and the need for environmental sustainability to be considered regardless of the individual feelings of end-users. Although Ionna's descriptions of her practice's engagement were closer to full control, there are still limits on what can be done within budgets and building regulations. This is particularly the case within the specific space limitations and standardisation within building design for publicly funded spaces, which has also been discussed by other researchers (Buse, Martin and Nettleton, 2018; Buse et al., 2017). As noted by Imrie and Street, these regulations and limits also relate to wider political and social contexts (2011). These aspects will be discussed further later, in the context of financial risks and funding implications for school buildings.

From the perspective of school staff, many interviewees felt that it is often the very basic things that are done wrong because there is not consultation with the teachers. Some of the examples were discussed with humour and general disbelief, such as Olivia's example of the pond outside the entrance of a new build school, which later had to be fenced off. Other examples discussed were subject specific and so teachers felt a clear sense that they, or their predecessors, had not been consulted, such as where there were massive, high windows in a science room that needed to be blacked out for the teaching of curriculum topics. Others were more particular or very simple, like not enough plug sockets or desks or whiteboards that were slightly too high for pupils to reach.

Ultimately, the examples from school staff demonstrated that their basic expectations and needs had not always been met, and the reality for many of the teachers interviewed echoed

the sentiments of Lauren – there was some “fancy” stuff but if the simple things were wrong and had to then be worked around or rectified unnecessarily, they felt significant disappointment in the process and the end result. As a result of such simple things being wrong, many interviewees talked about how their school had retrofitted or altered the spaces after they had been built or renovated, adding unnecessary cost and work to the process. The suggestion from architect Ian of the use of VR for showing parents a new school building demonstrates new ways in which computer models and technology could be used in the future to ensure stakeholders understood the realities of a building’s design and could offer tangible suggestions at an early enough stage for changes to be made. This correlates with comments made by Edith, the school Site Manager, who suggested that the school staff had not been able to ‘read’ the architectural designs and would have needed to envisage more clearly their new spaces to understand what would not work in practice (see Figure 4). As noted by Ian, the use of VR in his practice was in its early stages and there were cost and training implications, and it was being largely used as a ‘wow factor’ for now. Nonetheless, this shows the possibilities and need for more effective ways of engaging in participation and consultation with end users. For many of the elements which participants felt were negatively affected by a lack of consultation and participation, there is a financial element, and this will be discussed further in the next section.

5 Risky Schools

The issue of risks, of various types, was a significant theme in interviews with architects and teachers and relates to some of the tensions in the previous chapter between design, use, regulation and financial constraints. The concept of risk is particularly applied to children and childhood, as they are considered vulnerable and therefore at risk of harm. While understandings of risk vary, the position taken here is of both risk existing but being context-specific and often dependent on individual perceptions. This will be explored below to aid in understanding contrasting conceptualisations of risk among architects and teachers and the tensions between risk and educational pedagogy. In interviews, this was an apparent foundation for discussions, with a variety of risks identified both as concrete risks and as abstract or notional. For participants, behaviour and keeping children safe (from themselves and others) was a considered risk. This relates to ideas of surveillance and was an important part of the functioning of school buildings for participants. Many participants also talked about the tangible risk of health and safety issues, including structural defects and poorly maintained buildings. These were often tied together with concerns around financial constraints and the risks posed by lack of funding for high quality school buildings or adequate maintenance. Participants also reflected on the future, and the risks of schools being in a poor state of repair, unable to meet the demand for places and unable to provide high quality, sustainable education.

As a concept, risk has been explored by social theorists and others under a variety of lenses and in a variety of specific contexts (for example, Lupton, 2024; Rothstein, Huber and Gaskell, 2006; Fox, 1999; Jackson and Scott, 1999; Beck, 1995). Sociologists have examined and explained risk theories through *realist* and *social constructionist* epistemological lenses. Given the position of schools as working in *loco parentis*, the idea of school buildings, teachers, other staff, and measures in place in schools is often seen as a safety issue. Similar to how parents are responsible for their child's safety and are blamed if they are unsafe (Jackson and Scott, 1999), schools share that societal burden. As such, it is unsurprising that teachers and architects interviewed often referred to risks or the safety of pupils (and staff) in various ways. How teachers discussed safety varied based on their school environment, experience and pedagogy. Architect participants tended to refer to literal/physical risks. They showed a narrower view of risk in the school environment, reflecting their differing experience and focus – i.e. on the building and design, as opposed to the teaching, learning and behaviour management which is the perspective of teachers and school staff.

From a purely realist perspective, risks exist externally of our experiences and influence and are present regardless of our actions. This concept of risk in society represents a centuries-old perception of risk referring to “an act of God, a force majeure, a tempest or other peril of the sea that could not be imputed to wrongful conduct” (Ewald, 1993, p.226). Moving on from this early use of the term risk, “in the nineteenth century, the notion of risk underwent an extraordinary extension: risk was now no longer exclusively in nature… it had become social” (Ewald, 1993, pp.226–227). In terms of contemporary understandings of risk, Lupton presents the three main epistemological standpoints of risk in modern society (2013, pp.49–50):

a. *Naïve realism* – a perspective adopted mainly by cognitive psychologists, most closely related to a pure realist perspective in which risk is independent of human actions and can be measured objectively, but social and cultural factors distort our understanding of risk.

b. *Critical realism (or weak constructionism)* – the middle ground, whereby risks exist externally but are always modified by our socio-cultural interpretations.

c. *‘Strong’ constructionism* – risk is entirely the product of our perceptions and the socio-cultural and historical contexts in which we exist.

From a social constructionist standpoint – Lupton’s strong constructionist – theorists, including Foucault and those that draw on his work, see risks as entirely produced by society, for example, by cultural norms, social interactions and organisational discourses (see Dean, 1999; Castel, 1991; Ewald, 1991). For Foucault, this lies heavily with governmentality; thus, by creating a risk discourse, governments and organisations can passively control the behaviours of individuals. That is, behaviours are deemed safe or risky, and those who choose to exist outside of the prevailing social norms are ‘at risk’, for example, users of recreational drugs. For theorists such as Foucault and O’Malley, who take this governmentality stance within social constructionism, “risk is ultimately controllable” and the concept of risk is also used to control (Lupton, 1999, p.5).

However, the most prevalent group of social theorists take somewhat of a middle ground with varying degrees of realism/constructionism – Lupton’s critical realists. In this sphere, risk is explored as something that exists and can be measured but acknowledges that risks “are conceptualised differently in different historical and cultural contexts” (Beck, 1995, p.195). Theorists such as Beck and Giddens align more with this middle-ground approach to understanding risk, with their specific standpoints premised on ‘late-modernity’ as a critique that modernity has created many of the risks we now have, for example, climate change (Giddens, 1991a). Other such theorists, sitting within this middle-ground, include Douglas,

who explores the culturally specific nature of risk – the 'Other', which sits outside any society's norms and traditional values and poses a risk to the social order within that society or culture (Douglas, 1994; Douglas and Wildavsky, 1982).

Other notable theorists include Fox, who posits three models of the risk/hazard relationship – "the ontological relation of a *risk* to a *hazard"* – although he acknowledges "there is potential overlap between perspectives" (Fox, 1999, p.16). Fox positions himself as the latter, what he calls, "*postmodern* position" (Fox, 1999, p.16) – Lupton's 'strong constructionist'. In discussing his position of *postmodern* risk interpretation, he uses case studies from research on the management of health risks in the workplace (Fox, 1991) and of recreational drug-users (see Fox, 1999; Beck and Rosenbaum, 1994; Buchanan, 1991). From these examples, he posits that people choose to take risks based on the socio-cultural presentation of the hazards involved. By assessing these situations as risks, we 'mask' the political discourse within which they are positioned as risky, thereby "silencing voices which dissent" (Lupton, 1999, p.7), and we should instead consider "resist[ing] authoritative statements about how humans should behave" (Fox, 1999, p.30).

Related to the concept of late-modernity, Jackson and Scott discuss the "general sense that society is becoming less stable and predictable", which increases our sense of risk and heightens our anxiety (Jackson and Scott, 1999, p.88). From a contemporary viewpoint, this can be linked to the *permacrisis* – a word coined to describe the feeling of living through multiple, ongoing global challenges, including war, high levels of inflation and political instability. This term was Collins Dictionary's word of the year in 2022 because of the widespread anxiety and fear about these ongoing global challenges (Busby, 2022).

Along with the sense of society becoming less stable, there is also a suggestion that we are faced with an increasing number of choices as we move from a more restrictive, traditional society (for example, adhering to strict religious conventions) towards a society with a greater range of socio-cultural backgrounds and choices. This offers us "many options and no easy solutions" (Jackson and Scott, 1999, p.89). This increased choice also links with the idea of individualisation – we are moving towards a society where risk is individualised, and risk assessment becomes a frequent part of our lives. As Giddens puts it, although the level of risk has not increased, "in conditions of modernity… thinking in terms of risk and risk assessment is an ever-present exercise" (Giddens, 1991a, p.124).

Additionally, as we move into an era where mass media and social media are overtaking traditional news media in influence there is an increase in 'lay' evaluations of risk in media. Traditional news media generally invite 'experts' to comment, often those with science or government credentials. In contrast, social media does not adhere to this definition of

‘expert’, allowing users to question these so-called experts’ authority and even position themselves as experts (Lupton, 2013). In recent years, there has been an increasing prevalence of misinformation spread online and through non-traditional news media, with a "general trend in mistrust in or denial of scientific expertise” (Lupton, 2024, p.194). These trends toward misinformation and ‘post-truth’ discourse became prominent during Donald Trump’s 2016 presidential campaign and have remained prevalent in US politics since, including during the 2024 Presidential campaign. As noted by Lupton, “the term ‘post-truth’ is employed to describe a public communication and information environment in which actors have strategically employed strategies designed to challenge expert knowledges and spread misinformation for political or corporate ends" (Lupton, 2024, p.200). In addition, the climate crisis and the COVID-19 pandemic have significant online presence within post-truth and misinformation spaces.

In addition to strategically deployed post-truth narratives from large actors, such as fossil fuel companies, traditionally trusted organisations such as the World Health Organisation (WHO) have been seen to be incorrect, specifically on some of their early information on COVID-19 infection. In combination with the trend toward individualisation of risk in Western European and American societies, "old certainties about expert systems have disintegrated" (Lupton, 2024, pp.206–207) and so it is unsurprising "people are often left in the quandary of working out who to trust" (Lupton, 2024, p.193). Further, Beck has suggested that people may understate some risks while focusing on other risks, as a kind of “psychological defence mechanism” (Lupton, 2024, p.201) – this relates back to the permacrisis and the inability of people to deal with all the risks that they may face in the current uncertain world.

Architecture and Risk

When it comes to architectural design and building construction, there is an obvious element of risk "that poorly designed buildings can pose to human health, habitation, and wellbeing” (Imrie and Street, 2011, p.171). There are numerous risks to consider, and one of the most significant risks is that the design or materials may not be structurally sound, which could lead to serious problems down the line. This requires architects to work with structural engineers and those in the construction industry to ensure building designs align with modern building standards, while also fulfilling the design style and aesthetics that architects and end-users may desire. As Imrie and Street mention, “architects are part of a complex (vertical) hierarchy of project control and command, subject to checks, constraints, and regulation" involving a multitude of actors (2011, p.176).

The architects Imrie and Street interviewed discussed several other aspects of risks in their work, including planning risks, energy risks, financial risks, and risks of projects over-running. Those interviewed also mentioned the importance of considering "the possible threat of litigation for breach of contract or negligence" (2011, p.182). Therefore, architects increasingly feel the need to have assessments and paper trails in place to document the risk assessment and mitigation taken, as this can reduce the potential for liability in the event of an incident. Power (2004) discusses these varieties of risk as a ‘duality of risk’ – an increase in regulations to mitigate risks (such as extensive building regulations) and an emergence of risk analysis to manage reputational risk to organisations in the event of malpractice or misconduct. For Power, the first aspect of risk management is about mitigating actual risk of harm, while the latter is about managing the risks associated with accountability and the possibility of litigation.

To account for the potential structural and physical risks, both government and non-government bodies set rules and regulations for activities deemed risky and "possessing capacities to create hazards and insecurities" (Imrie and Street, 2011, p.174). This includes the construction industry and architectural practice (for example through RIBA regulations), and the modern concept of building control came about in the 19th century (Imrie and Street, 2011). While the intention is to mitigate for risks and encourage the creation of safe buildings, and use of safe materials, increasing levels of regulations can sometimes lead to "a bureaucratic burden creating additional work for architects and other professionals” (Imrie and Street, 2011, p.175). Nonetheless, "research and innovation have [] enabled greater understanding, detection, and control of previously unidentified or unmeasured risks" which is what leads to an increasing number of building regulations and requirements (Rothstein, Huber and Gaskell, 2006, p.94). This can be seen in the example of the use, and subsequent ban, of construction materials containing asbestos, given our newfound understanding in the late 20th century that asbestos is highly carcinogenic (Public Health England, 2017).

As discussed in the Introduction, in the current building regulation climate, Reinforced Autoclaved Aerated Concrete (RAAC) is also becoming a cause for concern as a construction material. Having been used in many public buildings, including schools, the material has recently been deemed a potential hazard due to its short lifespan and propensity to crack. While there is not a current ban or limitation on its use, the UK government ordered the closure of many school buildings which were found to contain RAAC in Summer 2023 due to the danger of the buildings being structurally unsound (DfE, 2023). This came after the unexpected collapse of an RAAC beam in a school building that had previously been deemed safe (Spocchia, 2023).

On the other hand, built environments globally, and therefore architects, also have the capacity to address risks and overcome challenges within society – both for individual communities and in wider contexts. The European Union (EU) identified seven key global challenges as part of Horizon 2020, which relate to health and wellbeing, clean energy, green transport, efficient use of resources, inclusion in society and the security and freedom of the global population (Samuel, 2018, p.212). As discussed by Samuel (2018), all have an element of the built environment and so architects are well-placed to be part of the cohort addressing these challenges and overcoming the risks they create.

Children and Risk

The concept of risk has been extensively discussed concerning children and childhood, generally focusing on how children are perceived as 'at risk' and childhood as a vulnerable state. This area has been approached both from a practical perspective (or realist) – for example, researchers addressing the physical safety of school children within their environments, including the threat of gun violence, which is particularly prominent in American discourse – and from a social constructionist perspective – for example, the fear that "the institution of childhood itself" is at risk (Jackson and Scott, 1999, p.86).

Jackson and Scott explain that "parents are likely to be seen as culpable if they allow their children greater independence and harm comes of it", and this desire of parents (and adults generally) to protect (their) children can result in "negative consequences for children themselves" as their autonomy and freedom is curtailed in an attempt to prevent harm coming to them (Jackson and Scott, 1999, p.103). Jackson and Scott draw on earlier work (see Hood-Williams, 1990; Thorne, 1987) to explore the implications of parents "acting as gatekeepers of children's freedom", including children losing the ability to learn about safety for themselves. There becomes a "self-fulfilling prophecy" whereby if children are not allowed to experience something, they do not know how to do it (Jackson and Scott, 1999, p.94). The media exacerbate this risk anxiety, seen in news headlines throughout the years, despite children being the least likely group to be victims of crime committed by strangers (Jackson and Scott, 1999, p.94). However, Jackson and Scott further criticise the media for their contradictory messaging, as despite this tendency to emphasise the risks children face, they also vilify parents who are deemed overly protective of their children. This dichotomy leaves parents with even fewer clear choices, given (Western European and American) societies' lack of clear rules on what children can and cannot safely do.

Jackson and Scott emphasise this cultural and global inconsistency, with many indications of risk or safety for children based heavily on Western European and American norms and values. The media furthers this portrayal of Westernised childhood, and "'Western' ideas about childhood profoundly affect the ways in which children from poorer countries are represented in the global media", with ideas about childhood often "entirely inappropriate to the contexts in which [many] children live" globally (Jackson and Scott, 1999, p.102).

Aside from the rise in influence of non-traditional news media and social media, discussed above, official online media (for example, that shared by news outlets or national organisations) still positions certain actors as experts, including government officials and other actors deemed experts in the field – in this case, for example, the National Society for the Prevention of Cruelty to Children (NSPCC). Guidelines on keeping children safe in these spheres of online media still adhere to notions of safety based on Western European and American culture. An example is the NSPCC website (NSPCC, 2023), which contains a section labelled *Keeping children safe* and includes guidance on how to keep children safe at school and in the workplace, mental health, online safety and safety in the home. Specifically, the section on safety in the home receives media attention during the summer months, when British school-aged children are not at school. Their advice on leaving children home alone is positioned as guidance which can be trusted and refers to building up a child's independence but also references the law, which states there is no age limit. It is never legal to leave a child home alone if they are not capable of looking after themselves. This advice and guidance raises questions for parents and carers about what is appropriate and, as indicated above, individualises the risk assessment that parents and carers must make.

Aside from the institution of childhood and the activities children undertake (or do not undertake), "the social world of children is divided into safe and dangerous places which has consequences for children's use of space, where they are allowed to go and the places they themselves feel safe in, frightened or excited by" (Jackson and Scott, 1999, p.101). This sentiment is echoed by the work of noted urbanist Jane Jacobs in her explorations of American cities (1993). In her work, she discusses parents allowing their children to go to certain places, and not others, as well as questioning their decisions in this regard. A prominent example of a safe space for children may be school; however, in recent years, this has been complicated by the risks children have faced at school from intruder violence. School shootings, particularly in America, although with notable examples elsewhere, including Scotland (see Macfarlane, 2021), have become a prevalent news headline, calling into question the assumption that schools are safe places for children. However, this

parallels with the statistics which show children are far more likely to come to physical harm from those they know (i.e. family or friends) than from strangers (Jackson and Scott, 1999).

Surveillance is seen as a big part of ‘keeping children safe’ in many countries and settings, reflecting other aspects of surveillance in society (Hope, 2013; Piro, 2007; Foucault, 1977). Efforts to make schools safe from violent incidents, such as mass shootings, are high on the agenda, particularly in America (Trosper, 2017). These ideas of risk and safety can shape the built environment of schools, with design often aimed at maximising surveillance. Increased surveillance and overt security measures, for example, by installing metal detectors and surveillance cameras at entrances, are seen as a practical method of making school buildings safer places (OECD, 2004). However, research has shown that this makes children feel less safe as they find this visible security and surveillance worrying. For example, if a police officer is standing in front of a school, it implies that the school is unsafe and they need protection there (Lamoreaux and Sulkowski, 2020).

Additionally, some argue that surveillance itself adds other risks. Even where surveillance is not obvious, the concept of passive surveillance has long been used in practice, and discussed in social theory, including Jeremy Bentham’s Panopticon (see Foucault, 1977). Foucault and Lefebvre addressed this concept in great depth and translated it to many areas of European social life and spaces (Lefebvre, 1991; Foucault, 1977). Foucauldian theorists have suggested that surveillance in schools, specifically, entrenches the idea that schools are “institutions of conformity” and can “[crush] individuality and creativity” (Piro, 2008, pp.30–31). Nevertheless, Piro suggests that a balance can be struck, and the American school campuses he explored in Philadelphia and Denver demonstrated this. These schools had “built in ‘line-of-sight’ hallways… [and] abundant space allowing for free movement for students” which acted to build a “learning network with seamless integration of security design” (Piro, 2008, p.43). This is as opposed to visible surveillance, such as “the installation of video cameras around a campus [which is] equivalent to the implementation of a high-tech version of Bentham’s Panopticon” (Piro, 2008, p.42). The latter approach has been adopted by some schools, particularly in America, in response to threats of gun violence and, post 9/11, terrorism. While visible surveillance has been suggested by some organisations as a response to such threats (OECD, 2004), the problems with this approach include those of Foucauldian theorists and researchers such as Lamoreaux and Sulkowski (2020), as mentioned above.

Interviews

Using the contextual grounding and risk discourses presented above, the accounts of interview participants will now be explored in relation to their experiential positioning of risk in the design and every-day use of school buildings. Data from interviews is examined below concerning four themes within the area of risk that interviewees associated with the physical spaces of school buildings, defined below.

You've got Big Brother, if anyone misbehaves they've got staff looking: this relates to risky behaviours and surveillance and behaviour management. Interviewees discussed aspects such as lines of site and passive surveillance to aid in behaviour management, along with behaviour of the wider community, for example antisocial behaviour in and around school buildings.

Fire doors that don't meet in the middle and a roof that's going to fall in: this relates to risky buildings, and the physical safety of pupils and staff, including structural safety, fire safety and other health concerns such as air quality. Discussions here included concerns for the maintenance of school buildings, with dilapidated buildings a common theme. Additionally, participants talked about other physical impacts of the built environment related to health and wellbeing, such as accessibility concerns and the risks of a space that is difficult to navigate.

Cost will always be the bad boy sitting there trying to spoil things: this relates to risky budgets, including cost efficiency within school building design and overall budget and cost-cutting measures. Interviewees talked about what they felt was a shortfall in finances for school buildings, with heavily politicised concerns surrounding government school building programmes.

I think, ideal world, you would want something futureproofed: this relates to risky futures and the need for innovation and futureproofing, including the risks posed by, and response to, climate change, and the need for environmental sustainability. Discussion here also includes the risks associated with schools not being designed for future changes, such as increasing class sizes and expansion in year group offerings (e.g. the addition of a sixth form).

5.1 Risky behaviours: You've got Big Brother, if anyone misbehaves they've got staff looking

Behaviour management in the context of schooling can be approached from various standpoints, with some suggesting that allowing pupils greater autonomy can reduce the need for active behaviour management and encourage pupils to self-govern (Biesta, 2019; Brown, 2011). For Biesta, the socialisation learnt in school is as important as the academic learning that takes place, and ultimately offering greater autonomy can "encourage children and young people to come into a responsible relationship with their freedom" (2019, p.36). Researchers have also linked a greater level of autonomy over one's own behaviour in schools with pupils being more invested in their academic education and this autonomy and flexibility can "empower students to manage their own learning process" (O'Kelly et al., 2017, p.844).

In a more practical sense, the use of passive surveillance to aid behaviour management is often seen as beneficial by designers and school staff, in a similar sense to the passive surveillance discussed in relation to the Panopticon (Foucault, 1977). In research carried out by Daniels et al (2019) schools specifically reported the usefulness of open spaces for passive supervision of pupils. This can create a feeling of autonomy among pupils and limit the need for numerous staff to be 'on-duty' at breaktimes, while maintaining a certain standard of behaviour. In addition to behaviour management, surveillance is often used in schools to protect against antisocial or violent behaviour from outsiders, with fencing and CCTV seen as ways to minimise the risks associated with 'outsiders' (OECD, 2004). As discussed by Lamoureaux and Sulkowski though, defending against such risks must be balanced with a "non-threatening learning environment" (2020, p.153).

In interviews, Architects tended to talk about safety from a safeguarding point of view – the need for secure entrances or lines when designing buildings, particularly with community access. While architects spoke much less about behaviour management, this was an essential aspect for school staff, with Deputy Principal Alina noting that in a previous classroom setup, "the kids' behaviour was much worse" than in her current classroom environment – a difference which Alina felt was entirely about the way the space was laid out, as discussed below.

Behaviour Management

Deputy Principal Alina explained how she had previously been assigned to one classroom, with the pupils moving between classrooms throughout the day – this changed when the school moved to their new building, and the labs were only used when needed for experimental lessons. Alina explained that "before we moved, I had to teach in a lab all the

time, and I found that it was really difficult because the kids' behaviour was much worse". She described how the pupils "couldn't sit still on the stools because they kept fidgeting" and because "in secondary they're also much taller… when they're sat on a stool they're really tall… [and] being quite small and short… boys can be quite a challenge". Alina is an experienced teacher and felt she had "the authority and the behaviour management skills" to manage behaviour in the lab classroom. Still, she felt that "for newly qualified teachers and so on, it can be quite tough in science, going into that space".

In another comment on behaviour and room layout, Liam – a Headteacher and DT teacher – talked about how his school's main computer room has "got computers down the centre and computers around the outside," as illustrated above in 4.1 (Figure 4). While he felt this was acceptable in his school, because it is situated in an affluent area and has a selective intake, his experience in other schools had been different. He suggested that this layout would have caused problems with behaviour management in many schools with the kids not "doing the work" if the teacher cannot see their screens. On a similar note, Eleanor talked about the layout of one of her school's IT classrooms within her engineering and technology block (see **Error! Reference source not found.** below). Her IT classroom has "a U-shaped setup with the [] computers… so you can face [the kids] and see what everyone's on, on the computers". It is this type of layout that Liam felt would be more appropriate for most schools, as it makes monitoring and behaviour management easier. Liam's framing of this within his school illustrates classed ideas about behaviour and habitus (Bourdieu, 1973), which is discussed further in Chapter 6.2.

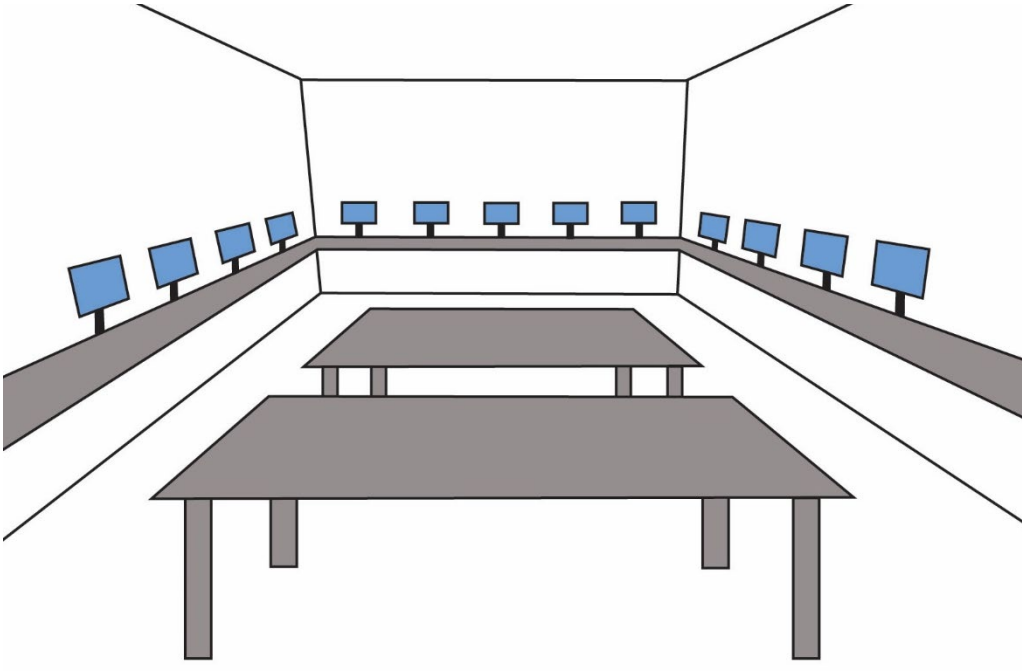

Figure 6: Impression of IT classroom - Teacher Eleanor

While the behaviour management challenges and solutions described by Alina, Liam and Eleanor, come from the perspective of secondary schools and pupils engaging in challenging or illicit behaviours instead of engaging with their work, Mia – a 1:1 SEND Teaching Assistant in a primary school – talked about the 'breakout' space from her classroom – the "shared area". This space helped allow children to come out of the classroom when they needed a break from their learning. However, she noted that it was very visible from the adjoining classrooms, so "it's a really really easy point for them to then distract not only each other in our class, but every other class off the shared area". This was a different type of unwanted behaviour than described by secondary school teachers and represented a different challenge for Mia and her colleagues in terms of lines of sight causing issue in classroom environments. This sometimes ended up in a "domino effect" and "suddenly you have like four kids running round the shared area" because if "someone's being disruptive… [everyone] can hear it [and] see it". While breakout spaces, and spaces for those with additional educational needs, have been shown to be important (Clements-Croome, 2020; Daniels et al., 2019), Mia's example shows it does not always work in practice, if not designed well. This echoes the findings of Daniels et al (2019), who found that many schools designed with open plan spaces ended up modifying them to be more enclosed because they did not work well in practice.

Many other participants mentioned the importance of lines of sight beyond classrooms and lessons, in the wider school environment – mostly from the perspective of teachers and

school staff managing pupil behaviour rather than pupils being able to see each other. This relates to the passive surveillance of the Panopticon concept, and the perceived impact of passive surveillance on behaviour, as discussed above (Foucault, 1977). English teacher Olivia mentioned that “the lines of sight are not great at all” at her school. She explained that this was because her school is in an older, converted building, so the narrow corridors and classrooms go off in different directions. This makes it harder for staff to see pupils, and with “the add-ons and higgledy-piggledy nature of the school… there are corners [they] can hide in [easily]”. As discussed by Sailer, movement areas and corridors are an important part of school design, particularly in relation to behaviour management, although they are often overlooked (2019). Terry – a Local Authority Delivery Manager with significant school building experience – talked about how architects would “say to us… we think this sort of corridor that snaked its way around” would be an interesting design. He would have to go back to the architects and explain that “you lose visual line of sight”, meaning the school would have “to have so many members of staff negotiating different points along the way, it would be hugely resource-hungry at break time”. Due to Terry’s experience and close work with the schools and design teams, he was able to “see those sorts of things very early on” and identify them as being problematic and “rein them [the architects] in”. However, he suggested that it demonstrated the broader problem that architects often were not considering the end user's needs, as discussed in the previous chapter. Terry’s experience reflects the need for stakeholders to be consulted in the early stages of the design process, in line with RIBA recommendations for architects (RIBA, 2020).

Meanwhile, Lauren’s newly built school (for children attending a Pupil Referral Unit) was built with a strong emphasis on behaviour management and maintaining safety – including key card access to all doors and locked gates to entrances. Lauren – an experienced teacher now working in alternative provision – felt the new space, which was not yet open, would help staff keep pupils safe by making it harder for them to leave designated areas (or enter other areas where they should not be). She said that “the pupils don’t like it”, she explained that when the pupils were taken “to see the new building, they said it was like a prison”. This resonates with Foucauldian theorists and their position on surveillance, with Foucault himself likening school design at the time to prisons (1977). It is perhaps unsurprising that, of the teachers interviewed, the only one to mention this kind of attitude from pupils was a teacher in a PRU. Lauren’s newly built school was specifically designed to manage the behaviour of children with challenging behaviour, who were not able to attend mainstream school, hence many areas of the school’s design incorporated visible surveillance and barriers which were not present in the schools of other participants. This

includes elements such as high fences sectioning off different areas and the entrance/exit, and keycard or number-lock access to all classrooms and several other areas of the school.

Although in some schools these elements were designed to keep outsiders from gaining access (to protect against intruders) as discussed below, in the case of Lauren's school, these elements were largely to restrict the movement of the pupils. While this is seen as a way to mitigate the risks, it also has the effect of making pupils feel "trapped" (Piro, 2008, p.31). This type of confinement, similar to prisons, is also apparent in other designs catered toward 'vulnerable' users, including care homes. Researchers have explored the design of care homes in relation to the lack of freedom and autonomy of those who reside in them, finding, for example, that staff in some care homes would limit access to outside areas by "locking doors due to concerns about risk" (Buse, Martin and Nettleton, 2018, p.27).

Community behaviour

Further to behaviour management of pupils within the classroom and learning environment, external behaviour – pupils when not in school and the behaviour of others in the community – was also of concern for participants. While some participants were involved with schools at risk of antisocial behaviour – either from challenging pupils or from the wider community – and needed to protect the school building, others commented on the need for community involvement with schools, embedding the school into the community, sometimes in an attempt to reduce antisocial behaviour.

Alina – a Deputy Principal and Science teacher – mentioned that her school "is in a really disadvantaged area" and the school was built on "this massive, abandoned plot of land that had just become like a tip, and like people were doing drugs… it was that bad". So, the multi-academy trust that built the school cleared the site and built "an amazing like massive sports hall… and then outdoors we've got massive fields, loads of space… And then alongside the tarmac they've planted trees around, and they've done this meadow and bug hotels". For Alina, this level of investment in the school site allowed the local community and pupils to feel a sense of pride and respect for their school building. She felt it significantly impacted the behaviour of all those using the site. This relates to the theory of *situational crime prevention* and the often-suggested idea that the environment can either hinder crime (i.e. through being open, well-lit, high quality) or encourage crime (i.e. by having low levels of street lighting, places to hide/alleyways, being run-down and poorly maintained or abandoned) (see Brantingham and Brantingham, 2019; Clarke, 1997). This also points to the

use of building aesthetics to transform classed habitus and 'tastes' as discussed further in Chapter 6.2 (Bourdieu, 1973).

Similarly, Alex – an experienced architect - suggested that there's a "concept that if you build something new and shiny, they will leave it alone". On one project, due to the nature of the local area, he had to consider the potential for antisocial behaviour when designing a new school building in a disadvantaged area. Alex explained that "the kids' hobby was to walk around on the flat roof throwing the slates at people", and after a "meeting about the new school while the kids were doing that… with all the governors there", it was accepted that they needed to design a solution. However, he "didn't want shutters on all the windows… and big gates and fences all around". Instead of "climbing a big fence and then no one can see you", Alex and his team did the opposite – they "just gave it [the outside space] to dog walkers and had the idea of passive security, so the community would actually look after it". To avoid the problem of people climbing on the roof, they designed it as a two-storey rather than the existing single-storey building. As Alex put it, they "had to create a really tough exterior that didn't look like a prison" because "you can't really do that to the community and the kids". The result was "quite tough… on the outside" but had "a big courtyard in the middle, so inside was all glass and soft", and Alex felt he had achieved his aim with this particular school project.

Hugh, another experienced architect, had a similar experience of redesigning a school in a disadvantaged area, which had a reputation for antisocial behaviour from pupils and which the local community "hated and loathed". The team of architects engaged the school and the wider community heavily in the consultation process, with the community initially opposed to "wasting 10 million pounds on this school", but by the end of the process "all these people had come round to the idea of it and [they were] really supportive". Ultimately, this led to a school whose "fortunes have been totally transformed by the work that's happened there", and that is "the go-to place for all the parents in [the] area". Similar to Alina's experience, for Hugh, this demonstrated the ability of the school building itself to transform the behaviour of those who used it and uplift the surrounding community.

Related to this, many schools have social events or community-use elements that can be beneficial to the community and the school but also involve handling the risks associated with letting 'outsiders' into the school environment. In one of Oliver's new-build school designs, "the school hall had a community use agreement as part of the planning approval" and so Oliver and his team had to ensure they designed for community use while maintaining the "security of the school". Their solution was to have the community and

visitors able to come in “through the entrance and there’s a secure line so you couldn’t access the rest of the school, but you could access the school hall”.

Community use was seen as essential and “expected” by architect Fiona and there was a consensus amongst the architect participants that, as Alex put it, “getting [the] community involved in schools is always good”. This sentiment was echoed by Hugh, who felt that a school “is so important and influential in establishing the community” as it’s “the one place where the whole community comes together”. This element of community involvement is seen as beneficial in broader research into urban spaces, particularly in terms of the safety of children, in which passive “community surveillance of children” can be shown to provide safe spaces and foster community cohesion (Jacobs, 1993, p.79). Although in this chapter, Jacobs is referring specifically to the ‘sidewalk culture’ of American cities, in which children play “under the casual supervision of adults” and are safe to do so as the surveillance is only “seemingly passive” with intervention occurring when necessary (Jacobs, 1993, p.78), it can easily be understood in different contexts including communities use of schools. Jacobs herself endorses the need for spaces to be mixed-use, both from a societal and economic perspective (1993).

For schools, they must mitigate the risks associated with inviting the community into schools, as the safeguarding of the children in their care is a core responsibility. Architects have suggested the use of strategies including ‘secure lines’ and flexible use of spaces, which is encouraged in research to allow schools to adapt to changes of use and users (Daniels et al., 2019). In practice, Liam discussed his school’s approach to inviting parents and the wider community into school. They “have the school day finish, and the parent event starts at a [specific] time” thereby having a “break in time” so the school is “no longer [acting in] loco parentis” but rather the parents and community coming into the school are using the space as a community space and are responsible for themselves and their children. Aside from people’s behaviour, the design and built environment of the school also has more literal, physical risks. Participants’ concerns in this regard are explored below.

5.2 Risky buildings: Fire doors that don’t meet in the middle and a roof that’s going to fall in

Many school staff interviewed talked, directly or indirectly, about the safety and security of their school sites, with a particular focus on the health and safety of pupils. This included the need for the design of their school buildings to enable them to keep pupils safe from outsiders, safe from each other or themselves, and safe from harm more generally, for

example, potential accidents or fires. The latter issue of accidental injury has become increasingly contemporaneous as the declining state of the UK's school buildings has become a prominent topic in the news media (for example, see Dyson, 2023). In particular, as discussed above, concerns around the use of RAAC in school buildings has caused significant disruption and anxiety amongst schools and parents.

There is also a broader health and safety aspect to school buildings, presented in a variety of research discussed earlier, including air quality, particularly relevant since the outbreak of COVID-19, temperature and other factors (see Abuhegazy et al., 2020; Mumovic, Chatzidiakou and Ahmed, 2019; Plotka, 2016). However, the key element drawn from interviews was clearly the maintenance of school buildings, which is unsurprising when it is considered alongside evidence of the poor state of repair of school buildings (see Morby, 2023; Duffy and Lapp, 2020; Council of the Great City Schools, 2014; Chan and Morgan, 1996).

Maintenance

Maintenance was the most significant health and safety issue discussed in relation to existing or older school buildings. This issue is particularly relevant given recent news coverage of the poor state of school buildings in the UK with indications that many are genuinely at risk of collapsing and causing injury to those using them, as discussed in Chapter 1 (see Walker and Knight, 2023; Fortescue and Borrett, 2022; Perraudin, 2019). After many years of this discourse in the media, the Conservative government was forced to publicly share a list of schools found to have RAAC, which was deemed dangerous after an incident involving a beam collapsing (DfE, 2023; Spocchia, 2023). These schools had to make short notice changes before the start of the 2023/24 academic year in order to mitigate the risks from the areas of their buildings that contained RAAC, which involved either moving classes and facilities to other parts of their sites or delaying the start of term entirely to make alternative arrangements such as temporary classrooms. It was also revealed that several of the schools affected had previously been denied funding for renovation through the Priority School Building Programme and other capital funding schemes, because they did not meet the threshold for urgent repairs or renovation (Evans, 2023) – meaning there were other schools in more dire states of repair requiring more urgent action.

As explained by Rothstein et al (2006, p.97), "risk-based regulation has been promoted as an economically rational decision-making instrument for managing the difficult trade-offs between competing priorities that are inherent in any regulatory activity". By applying this

here, it could be said that this risk-based analysis used to determine which schools get additional funding for maintenance and repairs is a standard approach to regulatory decision-making. However, the current media landscape includes Union spokespeople commenting on the risk of collapse of school buildings (Morby, 2023; Weale, 2023) and many commentators suggesting the issues are due to historical cuts to education funding (Weale, 2023; Adams, 2021). These perspectives reinforce the views and experiences of participants, with consensus that maintenance costs for schools are high and funding for routine maintenance too low to cover necessities.

Edith – an experienced school Site Manager – explained that the government funding rounds have specific criteria "of what's priority" for that year. So, for example, she mentioned that "a couple of years ago it was fire [safety] because of the Grenfell fire".[5] Although this was related to public interest issues at the time, Edith felt it did not help schools to plan because they would "spend all year getting quotes and looking for what you want to do". Then, if "it doesn't fit" the criteria or current priorities the school does not get any funding. During a walk around the same school, Headteacher Liam mentioned several 'health and safety' related issues, including "fire doors that don't quite meet in the middle [and] a roof that's going to fall in". He explained that although the school could get funding for some of those things because they were considered a severe health and safety risk, they were struggling to get funding to replace windows even though "it literally rains on the inside of the building" because this was not a priority for the government funding round and was not considered a severe health and safety issue. Of particular ire to Liam was "the hut round the back" – a decades-old 'temporary' classroom – with "a badger sett… running all the way underneath it" and a "dead badger, but we can't get to it". He was frustrated about this building because "there's no funding for this sort of stuff because it doesn't come under the category of health and safety", and so they were waiting for it to fall down entirely, with him even joking about "setting fire to [it]".

Vince – an Assistant Head at a Primary School – had a similar issue when talking about a previous school he worked in. They "won an e-bid to replace the roof in key stage two, but then there were other parts of the building that… weren't adequate". He mentioned that "the

[5] The Grenfell Tower fire was a serious fire that killed 72 people and destroyed a block of flats in West London, in June 2017. The fire raised serious questions around the safety of insulation and cladding materials. A subsequent public inquiry found serious failings by the UK government, the building management company, the London Fire Brigade and others contributed to the disaster. See https://www.grenfelltowerinquiry.org.uk/ for further information.

deputy's office would be leaking and you'd got mouldy books there", which contrasted quite heavily with the "200 grand new roof on other parts of the building".

In contrast, architect Oliver considered ongoing maintenance when designing schools and, similarly to the teachers interviewed, recognised the importance of low-level maintenance requirements. He referred to a specific project in which a school was having an additional block built, and the original proposed cladding materials was changed due to maintenance requirements. Once the project was complete, he said "the school were very delighted with how that turned out… [as it] shouldn't need any maintenance at all… no repainting".

The experiences of the teachers above all indicate an element of uncertainty and difficulty in procuring funding for ongoing maintenance, a fact reinforced by Edith's comment that her "normal maintenance" budget from the government has gone down "by fifty percent" and the cost of everything "has gone up by fifty percent". As Edith put it: "it's not prioritised, because teaching and obviously education is more important, but if you don't have the building to put the kids in…". Hence, the school relied on rounds of additional funding for things they would previously have repaired or replaced through routine maintenance. However, the Headteacher, Liam, mentioned Edith's suggestion to employ an in-house maintenance team "saves [them] a fortune".

Health and Safety

Aspects of the buildings related to the health and safety of users more generally – pupils, staff, and the community – were also brought up. In particular, Oliver – a Senior Architect focussing on Education projects – talked about the need for designing science classrooms with "fire-protected walls to the corridor" because of the increased risk of fires starting in these areas. Additionally, he found the design of 'super block' types of schools useful for safety, mentioning how "it's really simple to learn your way around [as] if you just carry on around you'll eventually get to anywhere". This means that "if there's a fire anywhere, if you can't go that way, you just go the other way… so you've always got a choice of escape routes". This relationship between safety and wayfinding in buildings such as schools and hospitals can have significant effects. Previous research has suggested that simple and well-designed wayfinding systems, such as those described by Oliver, can improve the end-users experience of their buildings and increase safety, particularly amongst those who are considered vulnerable, such as children and older people (Hamed, 2023; Bernardini et al., 2021; Bubric, Harvey and Pitamber, 2021).

Architect Oliver's experience with simple wayfinding in 'super block' schools contrasts the experience of newly qualify teacher Eleanor, highlighting the tensions between architects' accounts of design intentions and teachers' lived experiences of buildings. She described her own difficulties finding her way around her school and having to direct lost pupils frequently. For Eleanor, who had been at her school a little over a year, "trying to [] find certain departments sometimes is a nightmare" and "you only have to get yourself down one wrong corridor" to become lost. However, she also mentioned that "in engineering we have Arabic on all of our signs," which was a specific adjustment her department had made to help with accessibility. Her school had a high proportion of pupils with EAL (English as an additional language) and so by adding these signs in Arabic they helped many pupils to feel more confident and comfortable finding their way around. O'Kelly et al. (2017) discuss the importance of elements such as signs and 'cuing methods' which, as well as impacting behaviour, are useful in schools and public buildings for directing and leading users to where they need to be. They and other researchers maintain that a good environment should allow for autonomy (Bernardini et al., 2021; O'Kelly et al., 2017), which was not possible for many pupils at Eleanor's school due to the complexity and lack of cohesion of the buildings design. This difficulty in navigating complicated school buildings layouts was apparent in the experience of other teachers as well, which highlighted the constraints of older school building designs. Olivia – an experienced secondary school teacher – had, on the day of her interview, been asked for directions by one of the new Year 7 pupils. The classroom the pupil needed was "in the very bowels of the Victorian part of the school" and Olivia "got lost trying to show her where it was".

This is also an issue in relation to those with accessibility needs, which some teachers raised as a concern, including Evan – Head of Mathematics. He described his Maths block as not having a lift or any way of getting to the first floor other than walking upstairs. He mentioned that he was "trying to get them to install a stairlift because we've got no way of getting the kids who are broken-legged upstairs". Similar to Eleanor's difficult to navigate school, this has obvious implications for pupils (or other users) being at risk in the event of an evacuation or emergency situation. The difficulties faced by teachers, particularly those whose school buildings were older or in converted spaces, in ensuring safety and access for all of their pupils including those with additional needs points to the fact that, generally, buildings have been designed with the 'standard' able-body in mind (Buse et al., 2017; Imrie and Hall, 2001). However, as noted by many researchers in this area, it is possible to design for inclusion, both for physical accessibility and supporting independent navigation and use of space for vulnerable users (Imrie and Hall, 2001). This correlates with inclusive practices in education and the importance enabling full participation of all pupils, as the physical space

of classrooms and school buildings can be a barrier to educational participation for various reasons, including accessibility and the ability of pupils to independently use their learning spaces (Long, 2019).

Similar concerns were raised by headteacher Liam, who commented that “if we were to get somebody come and join our school in new Year 7 next year who was in a wheelchair I would have a big cry, because to retrofit the school so that they could access all of their curriculum properly, and weren’t disadvantaged, would cost a fortune”. Although Liam talked light-heartedly about this, he was clearly passionate about the school building needing to “work for all body shapes… and disabilities” and that no one should “be constrained by the building”, including pupils, staff and parents. Liam noted that, although they do not have any pupils currently registered who use a wheelchair, they do have parents who use a wheelchair, but that “it’s OK because we don’t do things like parents’ evening up in the art block, and [they] would never need to go there”. Nonetheless, it was a concern, as he realised that could impact the ability of parents and the wider community to access the school safely. As an engineering and design technology teacher, he had a good sense of the practical requirements that would be needed to retrofit the school buildings for a wheelchair user to have full, safe access, and he suggested this would be “quite difficult to do”. He also explained that, for the most part, “there’s routes round if you know” where to go, but that he would always “want to minimise the fact that somebody has to take an alternative route… because they [will] want to be able to walk to the next class with their mates in the same way that everybody else does” and safety would be a significant concern.

Whilst the issues above relate to older school buildings, and retroactive attempts to make these buildings safer and more accessible for users, there were also health and safety issues apparent in new school buildings. Teaching assistant Olivia mentioned that when staff were invited to visit her newly built school nearing completion, “there was a big pond outside”. She expressed surprise and could not “remember why… they’d built it”. All the staff “pointed out straight away that that might not be particularly sensible” or safe when children are running around. By the time the new building was open to pupils, the pond had been fenced off. While Olivia could not remember, she thought the pond had been meant “to make it look impressive from the outside”. However, on the planning documents, the pond is designated as a surface water storage pond. Also, in the planning drawings there was 1.8-metre-high fencing around the pond, although this had obviously not yet been erected when the staff were shown around. This further demonstrates the issues presented above in relation to a lack of participation and consultation with end-users, as for Olivia and the other staff this posed an unnecessary risk and was a bizarre inclusion in their new school space,

however, if there had been a good flow of communication between the architects and the school staff then they would have been aware of the purpose of this feature.

In contrast, Architect Ionna presented an example of appropriate levels of risk being important, which relates strongly to pedagogic theories including forest school and challenge (Huggins, 2012; Siraj-Blatchford, 2009) and arguments for ensuring that outside space can be used safely rather than be prohibited (Rendell and Carroll, 2015). As discussed in the previous chapter, Ionna had worked on a memorable project in which the community insisted on the school being positioned directly next to the local canal – an important environmental marker and feature for the local community. For Ionna, this presented obvious risks in terms of the children's safety around the water, which were particularly acute as it was a primary school with young children. However, engagement with the local community demonstrated that these risks were mitigated by the children being familiar with the canal from the earliest ages and water safety being ingrained in the community. The "live[d] with the canal" every day and so did not have the same perception of the risks associated with it that an outsider may have had (including the architects), which relates to the assertion that risk is impacted by cultural norms and context (Jackson and Scott, 1999).

Participants had various ideas and comments on the layout and design of their schools' spaces in relation to their ability to keep their pupils safe, from numerous factors. On several occasions these discussions would come back to a lack of funding to adequately design the space or staff the space, particularly in the example of inviting the community in or having adequate staffing for managing behaviour. Funding was also seen as the main barrier to ensuring the physical safety of their buildings. These elements of financial risk and uncertainty are explored further below.

5.3 Risky budgets: Cost will always be the bad boy sitting there trying to spoil things

Financial risks related to school buildings have long been debated in the public sphere, particularly in news media and their portrayal of various government funding schemes for school buildings. This has included a vast array of perceived problems around funding and cost-efficiency in the education sector. There have been discussions around the risks of not having enough places for pupils, due to a lack of funding for new schools or school expansions (Locker, 2024); overspending on schools where there is not a need for more places (Fazackerley, 2024); a lack of funding for essential maintenance (Minting, 2024); and the pervasive academic attainment gap for pupils from economically disadvantaged

backgrounds, despite additional funding for schools based on the number of pupils eligible for Free School Meals (Tuckett et al., 2023).

Researchers and commentators exploring school funding have suggested that a cost-based analysis demonstrates the importance of timely maintenance. Deferred maintenance can increase overall costs, resulting from emergency repairs and the potential for building collapse, which in turn leads to increased disruption for pupils and worse outcomes (Council of the Great City Schools, 2014). In America, though relevant to the UK, Duffy and Lapp (2020) found schools with dangerous levels of lead, asbestos and other potential hazards, with their main recommendation being to increase funding for the removal of these hazards and the ongoing maintenance required to minimise risks.

Despite the cost-efficiency of adequate ongoing funding and maintenance, in the UK, in real terms capital spending by the DfE fell 40% from 2009/10 to 20015/16 (Long and Bolton, 2016). This could be explained by the balance of other risks involved and the political position which affects how governments choose to allocate and spend money. In particular, the UK's economic policy underwent significant changes after the 2008 financial crisis (Hodson and Mabbett, 2009). Nonetheless, the former Conservative government was heavily criticised in the media, and by opposition parties, for their cost-cutting approach to education funding (see Rogers and Hopkirk, 2019; Richardson, 2013; Hoult, 2011). The Institute for Fiscal Studies also noted the disparity between the additional funding allocated to schools and the actual cost increases the sector faced – ultimately leaving a significant shortfall, despite increases in funding from 2019 onwards (Sibieta, 2023).

Many participants, particularly architects, discussed financial risks at length. There was a focus on budgets and government funding pots, with architects and teaching staff (particularly headteacher Liam) commenting on the level of funding available to existing schools and for new schools, and the complexity of navigating the application process for this funding. Participants talked about the cost efficiency of school buildings – the initial construction and ongoing maintenance – and a lack of cost efficiency, or money wasted, within the domain of school buildings, including money and time wasted in applying for funding which was then not granted. This left many participants feeling their schools were at risk of serious faults, including some with leaking roofs and windows.

In addition, there were impactful comments on the level of spending on school buildings, with some participants wanting more money to be available. Several participants noted that costs for materials and construction were increasing rapidly in the current climate – particularly since the COVID-19 pandemic and subsequent economic turmoil, which has sometimes resulted in shortages of raw materials and increasing labour costs for projects for

the architects interviewed. This was seen as a particular risk amongst architect participants, as their budgets became increasingly stretched through the length of a project, with priorities having to be strict. One architect, Fiona, noted that “cost will always be the bad boy sitting there trying to spoil things” but that the architects, contractors, and end-users must “compromise” to get the most from the funding, which has been indicated in previous research (Buse et al., 2017; Imrie and Street, 2011). Although many participants echoed this, some felt strongly that more money should be directed at school buildings. These contrasting views are discussed below.

Cost efficiency

Many participants discussed funding and money available – both architects and school staff. This included discussing the cost efficiency of projects during the procurement and design process and the actual construction. Many participants also had particular issues with a lack of cost efficiency in school building projects and, in their view, money being wasted. For participants, this presented risks of poorly designed buildings not fit for purpose and buildings which proved expensive to maintain in the long term, which can relate to a lack of consultation will end users as discussed in Chapter 4.

Headteacher Liam talked about multiple parts of the school which had been refurbished or rebuilt through government funding schemes. Although he spoke about these in largely favourable terms, he felt the money had not been spent most efficiently in several areas. This included an outdoor area the school wanted “to remain tarmac [for use as tennis courts], but because the contract said it had to be returned to its original state, they ripped up the tarmac and then put down grass”. The school plans to “rip up the grass and put down tarmac”, which frustrated Liam, as it could have all been done in the original process, and the total cost would have been less.

Another similar example Liam gave was about their new building, funded under the government’s Priority School Building Programme and completed in late 2019. The design for their new Sports Hall included several other classrooms in the new building, but Liam felt the space could have been used more effectively. It was designed as a single-storey, but there is a significant amount of extra head height in much of the building – particularly above the Sports Hall itself. Liam questioned why there was “dead space” when they could have been “using that space more effectively”. When the school has the budget, they plan to “put up stairs… [and] effectively get two classrooms”. Liam felt this could have been done whilst the building was under construction, which would have been much more cost effective and

barely more expensive, while creating additional space for the school to mitigate the future risks of an increase in pupil numbers or the need for social distancing in classrooms were it to arise again. Unfortunately, the funding process was “very prescriptive, so you’ve got to jump through hoops”, and this was one of the decisions the school had to accept as a result.

Lauren – a teacher at a Pupil Referral Unit who recently moved into a new building – mentioned some issues with money being wasted. In particular, she had “raised an eyebrow” at some of the decisions, including the “fancy bifold doors… put into the cafeteria”. She suggested there was nothing wrong with the old style of doors and given “that would have been really expensive… you kind of think that’s a kind of cosmetic thing” and a waste of money that could have been spent on something more useful. As Jacobs noted in her work on American city spaces, sometimes the focus for investment is in the wrong areas, which can be “frivolous” when there are “desperate shortages of money” in the public domain (1993, p.81).

Architect Alex found that the maintenance and small-scale refurbishment projects he had spent time working on could also be a waste of money. In one example, he mentioned that the local authority “spent a lot of money, they were refurbing, completely redoing common rooms and science labs” and then “two or three years later” the school was permanently closed. He also mentioned a new build school from the early 2000s, which closed just five years after opening, sitting empty for a decade until being refurbished for local authority use. He felt this type of money wasting showed that the local authorities did not have “a long-term outlook”. As Samuel notes (2018, p.212), "change has now become so rapid that the need to… make projects as future-proof as possible has become intense" for architects and so this lack of foresight amongst the regulatory bodies (including the UK government and local councils) is unsurprisingly frustrating. The risks of this lack of long-term outlook will be discussed in the following section.

While the above examples are recent buildings, through the PSBP, CIF and Local Authority funding, several other participants expressed concern over the money wasted in the now-historical Building Schools for the Future Programme. Terry – a Local Authority Commissioning Manager for school building projects – although there were “these inspirational presentations” and “all sorts of ambitions” for school buildings, it was “hugely expensive” and because of the change in government, it “all ended quite abruptly”. Ultimately, they got two schools rebuilt or refurbished in his area under BSF, but that was “out of nine secondaries, so it was a lot of work… a lot of money went out the door” and it “didn’t come to fruition”. Although he was not hugely critical of the BSF programme, he felt people had “been led down the garden path” and many schools did not see any benefits.

Further, Alex felt that BSF was “shocking” and saw “a heck of a lot of money get blown”. From his experience, “the budgets were insane” under BSF and when the following programme (PSBP) “cut the costs right down” it was “probably because of the backlash” from the large BSF budgets and spending. Whereas, when Iain talked about BSF, he spoke positively about the ability to design schools creatively under BSF, and when “there was a change in funding and the shift to PSBP” his practice “segued into private schools a lot more, because that’s where the funding was”. From his experience, the PSBP funding was focused on “build[ing] big schools as cheaply as possible” and “it went “too far down that road of efficiency and didn’t give enough credence to the quality of the spaces”. However, his practice’s shift to private schools was mainly because, as a smaller practice of “about 18 staff,” it was “very hard for [them] to get on board with the PSBP procurement strategy” to access the funding or be awarded the projects. They would have been competing with “big contractors, huge value projects packaged together” and could not compete on cost efficiencies for design and construction. Samuel’s work (2018) notes the difficulty that many smaller architecture practices face when trying to bid for work in some sectors where gatekeeping by practices already prominent in that sector is high and the ability of larger practices to offer cost-efficiency savings is a strong advantage. For Iain’s practice, the risks of undercosting in order to secure such bids would have been too great, as they could not secure the same cost efficiencies or absorb any overspend, as larger practices can.

Another source of wasted money for Liam was the bidding process for funding rounds. From his experience, often, “the only way of getting money is to use companies to get you through the bidding process and pay those companies to do it” – he is referring to hiring consultants who are experienced in the process of bidding for these government funds and who can complete the applications in a way that is more likely to be approved than if completed by someone with little experience of what the process requires and what the funding priorities for government are for that particular funding round. For Liam, this was “a waste of money” on a systemic level. However, it is the only option for many schools as they do not have staff with the knowledge and “the ability to access the money”. He also talked about his time being wasted, and therefore money, putting in bids for “little pots” of money. He is now careful about which funding he applies to as “pots of money that are a few hundred quid… [are] just not worth my time”. Whereas, “if you’ve got 10 grand, you can do something with [it]”, and so he felt the government and local authorities would “be better off lumping together and giving a few thousand, which makes it worth [it]” rather than having several smaller funding opportunities.

On a different note, speaking on the benefits of cost-efficiency and trying to keep costs low, Edith – a School Site Manager – mentioned that as part of the government funding for

their school's new building, they originally asked for a swimming pool attached to the Sport's Hall. This was turned down "because of the cost of running a swimming pool" and ultimately, Edith felt this was the right decision as the cost of energy has increased and the pool would likely be under-utilised.

Additionally, as mentioned above, Liam and Edith hired an in-house maintenance team (of two staff). Liam talked emphatically about how this was saving the school considerable amounts of money in the long run, as the cost of these staff was fixed (at their salary), whereas hiring contractors for each job was an unknown quantity and could add up to a significant amount of money over the year. The tipping point for Liam to make this change was when he hired an external contractor and "it was 450 quid just to turn a door round", and he decided they were "not doing that again".

Also related to a lack of cost efficiency, Liam mentioned that in their new building there were several carpeted areas. He was unimpressed by this aspect of the design/construction as "the first 5 minutes it looks amazing, but then after that" it's worn and dirty. He felt that particularly given the amount of money spent on the new building, "carpets in a school" are flimsy as in this case "it's only a couple of years old" and it's worn out, "we need lino for schools". This perhaps relates to Alex's comments about schools being "thrown up" with minimal money and little effort or no thought into the design. Given that it would only have cost a nominal amount more, Liam was surprised that the durability of the floor covering had not been considered part of the design process. Although not a significant problem from a broader perspective, as Liam pointed out, the school would have to replace the carpet after a relatively short period, which would take money away from other potential maintenance or improvement projects.

Architect Ionna also talked about cost efficiency and how her practice had made the most of the money available during the design process. Her particular approach – which was part of an exemplar school in Scotland – was to make sure all the spaces were "used properly". To achieve this, they "got rid of corridors" because they "are used every 40 minutes for about 5 minutes during the day" which is "not good use of space". She was also a strong advocate of "multiuse and community use" because it allowed spaces such as the school hall, which often "doesn't get used properly", to be "used more intensely and used better, because we can't afford to just build a new [building] every time". Her approach was "very grounded in the economics of it all" without compromising on the quality and education focus – demonstrated by her project being selected as an exemplar model by the Government.

Cost-cutting

As opposed to cost efficiency, many participants also talk about things being done cheaply or costs being cut in the area of school building. This was often attributed to the increasing price of materials, linked to the COVID-19 pandemic and subsequent shortages of materials and price inflation. However, several participants also attributed cost-cutting drives to the longer-term political environment, with some being heavily critical of the Coalition and Conservative governments' spending records on school building. Given the level of regulation involved in building design (Imrie and Street, 2011), many of the budgetary limitations that architects discussed were related to government-imposed regulations on cost and square-footage, known as Building Bulletins (see for example DfE, 2014a).

Architect Ionna, who had worked on multiple BSF schools, was highly critical of the government funding after New Labour's BSF programme. She felt that after "Michael Gove… cut all the funding… things have never really got back to the kind of aspirational" ideals of the BSF programme. Although she acknowledged that there was a realisation that "we've got a failing school stock and we need to replace it", she was critical of the government's approach and the PSBP. Ionna's particular views here contrast those of Alex, who felt that BSF wasted a lot of money.

Other architects also expressed concerns about how spending was cut for school buildings. Oscar felt that "schools have been unfairly squeezed on outdoor play space". Although he acknowledged that some of this was due to space "in urban areas where sites just aren't available", he felt it was usually the outdoor space that was lost ahead of any other space-saving measures. In his experience, "the thing that is always sacred to the Department for Education is the amount of indoor space… whereas outdoor space… you can provide less". Oscar felt strongly that cost-cutting around outdoor space was detrimental to "the whole health and wellbeing thing," it was becoming increasingly challenging to deliver buildings that centred health and wellbeing "because the margins are so tight now". In his view, this issue was "bigger than just architecture and aesthetics" and should be given a higher priority. This is particularly the case in secondary school buildings, as play and learning outdoors is part of the EYFS Framework, but outdoor space is not a prominent part of the requirements for buildings for older children (DfE, 2014b; Early Education, 2014). This challenge is also in line with building in other sectors, such as care home for older people, in which the outside spaces are often the first to face cutbacks when budgets are restricted (Buse, Martin and Nettleton, 2018; Buse et al., 2017).

Fiona – another architect with significant school-building experience – felt strongly that cost was a limiting factor. However, her practical assessment of the situation was that “it’s just how you negotiate and compromise and get the best out of the pot of money you’ve got”. As she points out, “it’s not going to be perfect, because cost is always going to be a constraint,” but she felt that “generally speaking,” the school-building funding and process is “moving in the right direction”.

Tim – an experienced architect with experience in various sectors – had a similarly pragmatic approach to the funding climate. He commented that “everything is dictated by budgets” and “it’s a commercial reality” as the contractors have to make a profit for the industry to be viable. He felt that materials were one of the main areas where cost was a factor. He expressed disappointment that this “can limit the creativity and diminish the quality of the final product… from the outset”. An alternative approach from his perspective would be to see “what you can produce” with innovative designs and creativity and then “pull it back from there” in terms of budget rather than starting off designing as cheaply as possible. As it is, his practice had found it difficult to compete for school building projects, as it was “a bit of a race to the bottom”, with practices having to have “the lowest fee really to stand any chance of securing the job”.

Alex also felt that there were problems with “really cheap” schools being “thrown up,” but although it was “a bit of a shame”, he thought they were “technically not much worse than the prefab schools from the seventies”. He mentioned visiting one in particular, which “wasn’t that bad”, and he “actually preferred it to the Victorian [schools]; at least it had windows you could see out of”. Alex’s was that these types of school designs were less oppressive, particularly when children could look out of the window if they wanted to. This reflects research which has shown that being able to see outside, and the type of view you can see from a window, has an impact on health, wellbeing and positive perceptions of space (Ko et al., 2022; Benfield et al., 2015; Beute and de Kort, 2014). Speaking on a similar topic, he pointed out that many schools he’d had experience with had “not seen any investment for so long, they would have been pleased with anything,” and so the quality was not seen as a significant issue by some schools as it was better than nothing. He knew of “heads [who] had never seen any investment ever [in their schools]… that’s why they were so happy” with anything they could get. This tendency towards cost-cutting in the building process could be problematic and cause future risks though, which can be seen in the current concern for the safety of buildings constructed using RAAC (Merritt, 2024). This material was used because it was cheaper than the alternatives, but now it has the potential to cause numerous risks including injury, high costs for maintenance or renovation of buildings and reputational risk (for the government specifically).

Another significant aspect of cost-cutting, from the perspective of architects, was the increasing cost of materials – so while the budget may be the same, the material costs rise and less can be done within budget. Tim talked about “material price inflation” resulting in them having to “value engineer projects on the fly” to reduce costs – the term ‘value engineer’ refers to modifying designs to provide the necessary elements at the lowest value possible (Nettleton et al., 2020). In practice, for Tim’s team, this meant “having to replace, substitute materials, change the design,” but “there’s only so much you can do sometimes”. Many of Tim’s clients were local authorities and “the budget is set… they haven’t got any more money”, so it was a “challenge” to deliver some projects for the budget. As mentioned above, architect and construction companies are often taking on the risk of financial shortfall in such projects, which makes it difficult for smaller companies to successfully bid for school building projects.

Local Authority Commissioning Manager Terry also commented on the increasing cost of materials. He talked about dealing with “supply chain issues” and “costs have just been going up and up and up”. He explained that “three years ago we would have been budgeting between 2,000 and 2,500 pounds [for a] new build [school], per square metre,” whereas “now it’s between 3,500 and 4,000 pounds”. For Terry, the solution to these increasing costs has been to do “the urgent bit rather than the nice to have bit” in projects so that schools in his local authority still get the necessary maintenance. In addition, he mentioned “pushing [projects] to next year,” where possible, to cut this year’s budget and attempt to ride out some of the material and labour cost inflation. In this way, he was mitigating some of the financial risks, but potentially setting up other risks (such as a short fall in places) for the future. For him, this was the trade-off that was necessary, “prioritising” some projects over others based on his analysis of need.

While many of the cost-cutting and cost-efficiency measures that have been employed by successive Conservative governments from 2010 to 2024 as part of their school building programmes are based on the financial risk of overspending public funds, there is a strong argument that underfunding schools is also a significant risk. In particular, the cost-benefit analysis, and ultimate cost-efficiency, of school buildings may benefit from increased funding, particularly in the areas of maintenance and designing for future possible needs. This idea of futureproofing, and its associated cost-efficiency, is discussed below.

5.4 Risky futures: Ideal world, you would want something futureproofed

The idea of futureproofing school building, and other public buildings, is associated with the need for longevity and, therefore, cost-efficiency as discussed above. Various researchers have explored the innovative risks that are required to design future-proofed learning environments that are flexible and adaptable to changing needs (Deppeler et al., 2022; Daniels et al., 2019). For Deppeler et al, there needs to be a focus on collaborative design in order to allow stakeholders and end-users to be resilient to the risks of innovative design, while designing "learning environment for future conditions of risk and uncertainty" (2022, p.622). Similarly, Daniels et al (2019) stress the need for adaptability and flexibility in the design, for both changes in pedagogy and changes in intake. Daniel et al also conclude that BSF specifically did not achieve futureproofed school building, partly because a significant amount of money was invested in a particular idea of what the future would look like, but now "the technology has changed" those schools are now out of date (2019, p.53). This refers to aspects such as interactive whiteboards and large banks of computers – which are now somewhat redundant due to the increasing use of portable/wireless technologies.

Futureproofing (school) buildings also relates heavily to their environmental sustainability and mitigating future environmental risks (Lupton, 2024; Beck, 1995; Giddens, 1991a). This is apparent in commentaries from architects and news media (Sanchez, 2023; Waite, 2023; Harrabin, 2021). Alongside the media, researchers have espoused the need for environmentally sustainable building design for years, due to the increasing risks associated with climate change, including severe weather events, temperature extremes and the risk of disease (i.e. the outbreak of the COVID-19 pandemic). Specifically in relation to schools, this has included researchers exploring the need for improved ventilation (Abuhegazy et al., 2020; Mumovic, Chatzidiakou and Ahmed, 2019) and the impact of pollution on pupils (Heissel, Persico and Simon, 2019). Additionally, there is an argument for sustainable design being a cost-saving measure, particularly in the face of increasing energy costs with some schools designed to maximise passive heating and solar energy (Ferrari, Masera and Dell'oro, 2006).

Participants spoke about various aspects of futureproofing concerning school buildings. This came in many forms, including discussing the importance of sustainable construction and energy efficiency in the face of climate change and increasing energy costs. Both school staff and architects talked about sustainable materials and systems. This included consideration of environmental sustainability and the health and well-being of pupils from an environmental perspective (as opposed to the above 'health and safety' related issues). Many school staff also discussed the need for spaces to change or be used differently. This included the need for space to accommodate different subjects as the curriculum requirements changed over time and to accommodate more pupils as year-on-year pupil

intakes increased. There were also many comments about maintenance and ongoing work on school buildings, which some staff felt was inadequate. Ultimately, as teacher Lauren put it, in an “ideal world, you would want something futureproofed”, but, related to the previous section, “often [there] isn’t the investment”.

Sustainability

Several participants talked about the need for school buildings to be sustainable, both in relation to environmental sustainability and longevity and ability to be maintained. While architects who spoke on this were focused mainly on climate change and environmental sustainability in design, school staff often mentioned a need for ongoing adequate maintenance of their buildings or the materials needing to be resilient or hard-wearing.

School Site Manager Edith was concerned during her interview with the school’s imminent need to consider replacing several physical elements. This included renewing “the boilers to something more economical and the lighting… we want LED lighting”. For Edith, the boiler was a particular concern because they “looked into biomass” from an economical and sustainable perspective; any boiler replacement would be challenging “because it’s all right replacing the boiler, but then it’s all connected to everything else” and all the pipes and radiators across the whole school estate would be part of the project. Although she was “all for green and [environmental] efficiency… it’s never as simple as people think it is”.

Architects also mentioned energy-efficient systems and systems that accounted for climate change. Louise noted that natural ventilation (or nat vent) is not a perfect replacement for mechanical ventilation, particularly if a school has issues with nearby pollution (such as a main road) or if there are difficulties maintaining temperature, as “obviously in the winter you don’t necessarily want your pupils to be sitting there in coats because nat vent is the only strategy”. Participants found that these issues are complex and need to be individualised for schools, so “there has… [to be] a lot of conversation” to ensure the best solutions are applied in the right circumstances to meet the needs of each project. The example provided by Louise of natural ventilation being problematic if a school has high levels of pollution nearby reiterates Edith’s comments that environmental efficiency and sustainability are not necessarily simple to achieve and there can be complex issues to overcome.

Generally, access to outdoor space and nature was also a clear theme within the interviews when discussing environmental sustainability, which is unsurprising given the pedagogic and societal interest in outdoor space and its effect on health and wellbeing

(Gould, 2014; White, 2014). The importance of both nature or access to the outdoors and environmental sustainability within school building considerations further demonstrates the relationship between schools and their wider communities and society, as the increasing importance amongst the general population of environmental sustainability and climate change can be seen particularly strongly in the younger generations (Parker, 2020). However, this was also framed in discussions on cost-cutting and the difficulty in including outdoor space in a meaningful way, as discussed above in Chapter 5.3. The presence of outdoor space within a school's grounds was often linked to the school's environmental sustainability standards and general ethos; for example, Architect Louise felt that "if you're talking about futureproofing the school and responding to a sustainability agenda, you want to be celebrating and utilising your green spaces, not building on them". For Louise's practice, there was a focus on sustainability and working with schools (and other clients more generally) to achieve "a real marriage between green architecture in the building physics sense, but also people-centric design, community-focused design, the social aspect of sustainability".

Although some of the focus on environmental sustainability was coming from architects, with Hugh pointing out that the government's framework and "the RIBA guidance for 2030" have a focus on this, Oscar explained that architects were "starting to see briefs come in, new projects where there is more focus on health and wellbeing and being outdoors" partly in response to climate change and public awareness of the associated risks. Ionna also found this, mentioning that "it's been driven by the students, let's be perfectly frank… the students are saying this has got to happen, and the schoolchildren are saying this has got to happen" in reference to environmentally sustainable measures. For Ionna, this was "a bit of a relief" because previously, her practice had been "saying you've got to do it [adopt sustainable measures]", but the costs associated were high and schools wanted "money to be spent [elsewhere] instead". This echoes research demonstrating the intergenerational influence children and young people can have on adults, specifically in relation to climate change and the environment (Ballantyne et al., 2006), which is commensurate with notions of schools as vessels for societies future progress (Williams, 2017; Dewey, 1990). Additionally, research has found a correlation between pupils having positive attitudes to environmentally sustainable design and attending schools with environmentally sustainable principles applied to their buildings (Tucker and Izadpanahi, 2017; Izadpanahi, Elkadi and Tucker, 2015). Hence, embedding environmentally friendly design into school buildings can have lasting positive consequences for the building and its occupants' attitudes and wider society, in addition to cutting costs in the long-term, providing overall benefit when the risks are weighed up.

Adaptability

Many interviewees discussed the need for school spaces to be multi-use or adaptable for different requirements. For school staff, this was primarily due to the changing curriculum, increasing pupil numbers, or the need to reorganise and manage pupil flow during the COVID-19 pandemic. Linked to this, architects often mentioned projects funded through a local authority's need to provide more pupil places, either by building new schools or extending existing ones.

For Deputy Principal Alina, the main downside of her newly built school was a need for futureproofing and foresight regarding the space. Alina's school building was designed to provide extra space for a sixth form, which is a plan for the school. However, because "the curriculum has changed" with "a lot more emphasis on having like music, DT" and other subjects, the spaces and classrooms designed initially need to be reorganised and reallocated. For example, they already have "a food technology room, [but] also now need a DT room… [and] a music room". This means their "extra space for a sixth form" will likely be lost to other needs before they launch their sixth form offering. She felt that "unfortunately they're going to have to redesign" the spaces because there are "4 computer rooms", but they will "have to convert it" for other subjects, and that's a challenge because then "the timetabling becomes quite tight" for lessons in the computer rooms. This demonstrates the particular challenges of designing for adaptability when subjects require specialist equipment and spaces, and relates to comments made by other subject specialists including science teacher Allegra in her comments regarding her lab space and the lack of adaptability it presented.

At the time of the interview, Alina did not know what the school was going to do in the future in terms of their plans to open a sixth form, and she did not feel they had the space to do it and they were also "probably gonna have to put a lot of money into redoing some rooms". Whilst researchers have suggested that schools should be designed with this type of flexibility for future unknown needs in mind (Deppeler et al., 2022; Daniels et al., 2019), in the example Alina gives it is clear that the school was not prepared for these changes and whilst they can accommodate some of the necessary changes it will leave the with little flexibility in other areas including the potential subject offerings they can provide. Additionally, this adds to the cost-inefficiency of the school, as Alina mentioned the high cost of changing the layout/room uses and the potential for having to fund an extension in the future to house a sixth form.

Vince's previous school had a similar issue: "It started as a one-form entry and some classes only had five or six kids in", meaning that each incoming year group had one class. The school later became a two-form entry – so each incoming year group had two classes – which was manageable, "but there is nowhere for that school to build" so if they ever "need a third class in year group… if pupil numbers rise" there is no room for change. Essentially, Vince felt that when the school was conceived, it was "going to be a two-form entry, end of". Mia's school had a similar two-form entry plan, and "the school's big enough for two-form entry," but they would struggle to adapt to changes if pupil numbers in the area increased.

Eleanor's school was in the process of having a new building designed under the Conservative government's School Rebuilding Programme launched in 2020. The school gained this funding due to "taking on more students" and now having "a waiting list", with the local area having an imminent shortage of school places. Until the new building is completed, Eleanor is facing difficulties in the new academic year, as the new year classes will be larger than the current class sizes and have one more form of entry. They are "gonna have three classes at a time" in the DT and engineering area, using all three available spaces. However, the spaces are all connected, so classes will not be able to move between "the classroom… the computer room… [and] the workshop". Eleanor foresaw problems with this, particularly given that they "don't have chairs in the workshop," so any written work will be difficult in those lessons. The issues faced by Vince and Eleanor, with regards to pupil intake and increasing class sizes, was raised by Daniel et al (2019), with a particular critique of BSF schools, which were designed with a focus on contemporary pedagogic ideas, and did not take into account the possibility of changing demographics like class size or intake. This relationship between pedagogy and school buildings is explored further in Chapter 0, including the flexibility required for changing pedagogies and different teachers and subjects.

Similarly, Liam talked about reorganising the canteen space in his school because when he took over as Headteacher, "the kids were in cheek by jowl, and [they] increased the number of kids," so they needed to create more space for eating. They used their in-house maintenance team to resurface the original Sports Hall – as they had at this point received funding for their new building, which included a Sports Hall – and bought tables that "drop down, so we can convert that from a dining hall to an exam hall". Using "innovative thinking", as Liam described it, to repurpose the spaces, "it's a lot more relaxed, it's a lot more pleasant". He felt that "a lot of things come down to space and… thinking about how you use that space" best. Liam also felt that some of the classrooms in schools "were designed for the twenties, not the thirties" – referring to the number of pupils – and "even the newer build [schools]" are "designed with small classrooms in mind… [which] just doesn't help the situation". Liam's experiences demonstrate the need for innovative design and consideration

for the adaptability of school spaces, as discussed by Deppeler and others (Deppeler et al., 2022; Deppeler and Aikens, 2020).

Participants' concerns on futureproofing were largely concentrated around concern for sustainability both in terms of the environment and the building itself, and the flexibility of spaces to be altered to fit changing needs and demands. This varied between secondary and primary school staff, with secondary school staff sharing significant concerns around subject-specific spaces and their lack of adaptability – a concern not relevant for primary schools, which have largely non-subject specific classroom spaces.

5.5 Conclusions

This chapter has explored risk in relation to factors of risky behaviours, risky buildings, risky budgets and risky futures. These different types of risk come into tension with one another in architects' and teachers' discussions of school buildings. Based on the interviews with teachers, participants were generally satisfied with the safety elements in new builds, but school staff expressed concerns about maintenance both in newly built and older schools. Additionally, there are numerous news articles about the poor state of the school estate in the UK, as well as similar issues with the NHS estate and other public buildings, which supports the position of many school staff (Shearing et al., 2024; Davies, 2024; Dawkins, 2024; Mitchell, 2023). In particular, the UK is facing a significant challenge in addressing safety concerns over the use of RAAC in schools and other public buildings, which relates strongly to the build quality of schools and general maintenance issues. It, therefore, appears that safety may not be prioritised in school buildings due to the cost of the initial building and ongoing maintenance. While there may not be enough money to address all of these issues, it is possible to make the best use of the available funds – a point which was highlighted by both architects and teachers.

However, there was some disparity in what was considered most important for architects and teachers. Due to the differing perspectives and experiences of architects and teachers, school buildings held different meanings of risk, which was demonstrated by the interview data. In particular, the concept of futureproofing, and the risks associated with a lack of futureproofing, held different meanings for participants. Although futureproofing is given high importance in the architecture field (Samuel, 2018), architects interviewed tended to discuss innovation and environmental sustainability in new-build designs, within budgetary constraints – sometimes with frustration that budgets would not allow the creativity that the architects may have ideally designed with for their image of sustainability and innovation. On

the other hand, it was clear from several teachers and school staff that they “need basics done well, and it needs to be childproof” [Liam], designed with practically and longevity in mind. Many teachers had little time for innovative and unique designs which were seen as being unnecessarily expensive and often impractical. Particularly, overly-complex systems for heating and other basic building functions were often detrimental for school staff interviewed, as they were not useable and created problems with ongoing use and maintenance – sometimes having the opposite effect to that desired by ultimately costing more. Drawing on the previous chapter, this further demonstrates the need for consultation to be meaningful and for the experiences and wishes of end-users to be embedded within the design process.

There were also some differences between groups of teachers, with secondary teachers, who are generally subject specialists, having more concern for the difficulty in adapting their spaces and therefore the need for spaces to be considered in the long term to avoid future problems. Primary school teachers, on the other hand, did not share similar concerns, which is likely to be because their classroom spaces were more adaptable and in a more traditional classroom style than subject-specific spaces required for science and technology (subjects which four of the teaching participants were specialists in).

Sustainability and ‘planet health’ was a significant consideration for participants upon which there was consensus between the participant groups. There is growing awareness amongst the general population of the need for environmental action to limit climate change and respond to the COVID-19 pandemic, and so it is unsurprising that climate risks were discussed as important by both teachers and architects. Due to these global, wide-reaching risks (Lupton, 2024; Beck, 1995; Giddens, 1991a) there is a country-wide (in fact, worldwide) drive towards sustainable building – both in terms of materials/construction and energy use – and indeed this area was identified as a key global challenge by the EU (Samuel, 2018). This was reflected in the interview data, with teachers and architects viewing challenges such as the use of sustainable materials and the incorporation of green energy as important consideration for the future of school building. Additionally, the primarily accepted premise that being active and outdoors has a beneficial health impact on children was also captured within the interviews, with many participants feeling that the outdoor space of a school deserved as much attention in the design process as the indoor space. However, this is not (yet) reflected in official government guidelines, although there was some optimism amongst participants that this position may shift due to the COVID-19 pandemic.

This relates closely to the following chapter, which will discuss the pedagogical elements of school building design from the interview data, as several participants indicated that the schools were increasingly implementing designs that incorporated the outdoors and

sustainable elements, which directly related to the pedagogy and broader school ethos. Research has supported this premise, with pupils in environmentally sustainable school buildings having stronger support for environmental sustainability measures (Tucker and Izadpanahi, 2017; Izadpanahi, Elkadi and Tucker, 2015).

6 Design for Pedagogy

Pedagogy within schools and the teaching profession in the UK involves a diverse range of approaches and has evolved over time in line with contemporary circumstances like the government position, society's evolving views on children/childhood and wider societal changes (Darian-Smith and Willis, 2016; Harrison and Hutton, 2014; Siraj-Blatchford, 2009). Rooted in a rich history of educational philosophy and practice, the pedagogic principles adopted by schools and teachers are influenced by various educational theories, policy frameworks, and empirical research. Pedagogy is also entwined with school buildings and spatial design, sometimes with a disconnect between the design of spaces and the preferred pedagogy of teachers or the ethos of a school. Many teachers and architects discussed the subject-specific requirement of technical subjects, including the need for equipment in science labs, the layout of computer rooms, the setup of physical education spaces. There was also discussion of overall school ethos and how this connected, or did not connect, with the impression given by the school buildings, the atmosphere they created and the embodiment of their educational principles. Interviews also reflected the disparities between prevailing pedagogic and social principles and the funding and regulatory framework which school buildings must fall within.

Historically, following the first world war, educational philosophy in the UK was heavily influenced by educational thinkers such as John Dewey, Maria Montessori, Jean Piaget and Lev Vygotsky. The educational theories of such thinkers have contributed to the development of progressive pedagogical approaches which are embedded in schools, teacher education and teaching standards in the UK (Tisdall, 2020). As explored in depth by Tisdall (2020), the adoption of these approaches tend to focus on incorporating active learning, critical thinking, and experiential learning, emphasising the importance of student engagement and autonomy in the learning process. Additionally, cross-curricula and inter-disciplinarity are generally encouraged.

Approaches stemming from concepts such as active learning are introduced to those pursuing education-based careers in the UK (for example, undertaking teacher training). This includes principles such as sustained shared thinking (SST), which is considered a key aspect of effective practice, particularly in the EYFS, evidenced by its inclusion in the Teachers' Standards for Early Years teachers (NCTL and DfE, 2013). As discussed in detail in Chapter 2.3, there has been an increasing move towards this in recent years and much of the pedagogy applied during teacher training is now focused on the idea of practitioners being aware of children's interests and working alongside them to develop skills or ideas

(Constable, 2015; White, 2011; Siraj-Blatchford, 2009). This requires practitioners to be facilitators of learning through encouraging communication and conversation (Constable, 2015; White, 2011; Siraj-Blatchford, 2009). However, the extent to which these progressive theories of education and learning translate into classroom pedagogy naturally varies between teachers/education professionals and schools. Ideologically, teaching pedagogy and the expectations placed on schools is inevitably closely linked to the elected government's stance – state schools must follow the National Curriculum, which is reviewed and overseen by the government and, to an extent, limits the pedagogical approaches which can be utilised. In more practical terms, teaching and learning is also evolving because of advancements in technology and adoption of new technology more widely.

The former Conservative government's approach to teaching and learning between 2010 and 2024, beginning with Michael Gove as Secretary of State for Education in 2010, leant towards knowledge-based education and a focus on traditionally academic subject areas. The Conservative education policy enacted through the last 14 years of Conservative-led government can be seen as both regressive or a step backwards, and as liberating and encouraging innovation (Exley and Ball, 2011). Michael Gove himself evokes a similar dichotomy, with a Guardian article at the end of his tenure as Education Secretary highlighting his polarisation as the "'bogeyman' or 'the greatest education secretary ever'", with numerous teachers and other education professionals interviewed often expressing dislike for the former education secretary, although also an understanding of the difficulty of the job (Tickle and Ratcliffe, 2014). There is, then, a tension between the teaching profession, typically seen as liberal and left-wing in ethos, and the Conservative education policy landscape (Exley and Ball, 2011). However, the tendency for Conservative policy more broadly as a decentralised and individualised approach allowed for schools to maintain somewhat of their own ethos and pedagogic principles, albeit while conforming to National Curriculum changes and the drive towards test scores as a measure of success.

One area which has a strong influence from these progressive pedagogical approaches is the Early Years Foundation Stage (EYFS) and the statutory framework that relates to this stage (DfE, 2014b). The EYFS framework covers children in education settings up to the age of five – encompassing nurseries and other childcare providers, as well as the first year of primary school – focuses on learning through games and play. Teachers are viewed as facilitators and are there to encourage and also to document progress. This progressive approach to early years is relatively consistent across the political spectrum, and indeed across the teaching profession, with strong evidence that learning through play is valuable and the most appropriate strategy in early childhood (Siraj-Blatchford, 2009; Brown and Fraser, 2002).

Away from policy, the use of technology in classrooms now forms a significant part of the teaching and learning experience, and this has increased largely out of necessity given the technological advancements in wider society (Roy, 2019). This shift can be seen in the design of Building Schools for the Future (BSF) schools two decades ago and has expanded rapidly since (Patel, 2005). During the COVID-19 pandemic and associated societal 'lockdowns' in the UK, schools were closed to most pupils for prolonged periods. As a result, approaches including virtual class delivery (for example, using Microsoft Teams) and online asynchronous learning (for example, recorded classes and online follow-up exercises) were adopted by many schools (see Baxter, Floyd and Jewitt, 2023; Greenhow, Lewin and Staudt Willet, 2021; Scully, Lehane and Scully, 2021). This amplified the existing utilisation of technology in the delivery of teaching and learning, and since the full re-opening of schools, following the end of COVID-19 restrictions, the expanded use of technology has continued in many ways. Inevitably this shift towards the incorporation of technology into the education setting also has an impact on pedagogy and styles of teaching (Scully, Lehane and Scully, 2021).

Contrasting the increasing use of technology in schools, a far-reaching pedagogical approach which has been particularly popular in the UK is that of The Forest School, as discussed in Chapter 2.3.3. Although originally an American concept from the 1920's (Mittermaier, 2002), it was first introduced in Europe in Scandinavian regions (Williams-Siegfredson, 2012). While Forest Schools are a specific provision in some parts of the world, it has come to be recognised in the UK as a concept which can be transferred to any educational setting, in order to incorporate aspects of outdoor learning. The importance of quality outdoor provision has been recognised in the UK since the early 20th Century, and the Forest School approach and more general approaches focusing on the importance of outdoor learning have been adopted widely in the UK in more recent years (Giardiello, 2013; Knight, 2013). This was reflected in the revised EYFS Framework documentation (DfE, 2014b) and in further research that has indicated the importance of quality provision, well trained and enthusiastic staff who can facilitate children's outdoor learning appropriately, and utilisation of pedagogy that incorporates the available outdoor provision (Constable, 2015; Gould, 2014; White, 2014). However, research in this area tends to focus on younger age groups, EYFS and Key Stage 1, with more limited applications to older children, despite the known benefits to health and wellbeing of being outdoors (Wolf and Schmitz, 2024; Bragg, Wood and Barton, 2013; Knight, 2013).Since the onset of the COVID-19 pandemic, there has been a further increased awareness of the importance of access to outdoor space for children and adults alike (Wolf and Schmitz, 2024; Gray and Kellas, 2020). Although this has translated into educational professionals, government, and the wider public recognising the

importance of outdoor education provision as a core provision for education settings in the UK, this has not necessarily translated into the regulatory requirements for new or refurbished school building projects, with space at a premium, particularly in urban areas (Gray and Kellas, 2020).

Architecture and Pedagogy

The recognition of architects in school design, evident in the shortlisting of school buildings for prestigious awards like the Stirling Prize, underscores the growing acknowledgment of the profound impact of architecture on the educational landscape (Dorrell, 2010). This amplification of interest reflects a collective realisation that well-designed educational spaces contribute significantly to the overall learning experience. Specifically, there is recognition in research that the built environment can impact upon the teaching practices and overall pedagogy embodied within a school. For instance, Kraftl and Adey (2008) delve into the distinctive features of a Steiner kindergarten. They highlight the architectural elements that contribute to feelings of a welcome and homely environment, emphasising the symbiosis between the physical space and the underlying pedagogical philosophy in this context. Kraftl and Adey stress the importance of the subconscious impact of the architectural design, noting the role of the "womb-like interior" (2008, p.218) in aligning with the ethos of the school and the Steiner Waldorf Education philosophy.

Burke (2017) also underscores the necessity for educators to comprehend and embody the pedagogical principles embedded in the design. She emphasises that teachers play a pivotal role in realising the intentions of the architects. With specific reference to quiet spaces, Burke recognised the significance of “teachers, school inspectors and architects” having developed a “shared vocabulary of design” (2017, p.193). This cooperative understanding and design of space enabled the quiet spaces explored by Burke to be utilised effectively (and as intended). In particular, this pedagogic concept was centred on children being capable of choosing to take time in quiet to “concentrate, think, consider and even dream” (2017, p.193), if they had an appropriate space to retreat to. This sentiment aligns with psychologist Csikszentmihalyi's (1990a) concept of flow, suggesting that a well-designed educational environment enhances the likelihood of students entering a state of concentration and absorption conducive to effective learning (Shernoff et al., 2003; Csikszentmihalyi and Larson, 1984).

While in Kraftl and Adey and Burke’s explorations, the building and the pedagogy were inextricably connected and the existing pedagogy was embodied in the built environment,

this is not always the case. A notable example of an attempt to alter the prevailing pedagogy through building design can be seen in the buildings designed under the BSF programme. The 1997–2010 Labour government had a transformative agenda with their BSF programme, with the aim of delivering significant change to both the physical school estate and the dominant pedagogy (Woolner, 2010). However, research into BSF has shown limited success (Burman, Kimpian and Mumovic, 2018; Tse et al., 2015) and research on programmes with similar aims to influence pedagogy elsewhere in the world also showed limited success (Veloso, Marques and Duarte, 2014). The evaluations of these programmes have shown they may have been overly ambitious, in terms of the intended pedagogic and social changes that were intended to result from the programmes, and shown a lack of user engagement leading to difficulties translating intended use into pedagogic change (Tse et al., 2015; Veloso, Marques and Duarte, 2014). This reinforces the assertion made by Burke (2017) that teachers play a pivotal role in enacting the intentions of the design – without teachers utilising pedagogic principles that are congruent with the design of space, the space can only be used with limited effectiveness. This reflects the issues of user engagement and participation raised in Chapter 4, and relates strongly to many of the comments made by the architects interviewed, who noted that the end-user did not always utilise the design as intended.

The existing research demonstrates that the relationship between educational pedagogy and architectural design encompasses a complex interplay of factors. It involves both the physical structures and spatial planning, and also the conscious integration of pedagogical principles by both the architects at the design stage and subsequently the teaching staff in using the building's inherent features to complement their teaching pedagogy.

Interviews

In interviews, some key themes emerged in relation to pedagogical principles in education. It was mainly teacher participants who discussed their buildings in relation to their schools' pedagogical approaches, with many interviewees talking about how their classroom or other school spaces reflected, or affected, the way they taught and their overall expectations of their school (for example, in relation to behaviour).

Some architect participants also referred to pedagogical principles in relation to the design of school buildings, although usually in a less direct way. Architects were generally aware of differences in the teaching styles between different types of subjects, particularly practical subjects such as the arts, and they considered the pedagogy of these subjects in

their designs. They also made reference to flexibility in designs and how this could allow for teaches or subjects with different approaches or needs.

The themes identified as most significant from interview data have been labelled as *Pedagogy* and *Ethos.* Discussions on *Pedagogy* relate to individual teachers' views on pedagogical issues in relation to their classrooms and subjects. There are discussions of how teachers use their spaces in practice, how they would ideally use their spaces, and how their spaces work (or not) for their teaching style and subject area. *Ethos* provides a broader exploration of the atmosphere of schools and the overall pedagogic approach and principles encouraged within different schools. There is also discussion of how communal spaces and corridors are used and how the general ethos translates into the classroom.

6.1 Pedagogy: There's a lot more flexibility in a classroom than in a lab

During interviews, several participants referred to elements of the school buildings they discussed in relation to teaching pedagogy. Oscar, an experienced architect, spoke about the rigidity of the Building Bulletins and other government guidelines on school buildings. However, he explained that, with creative thinking, there were opportunities to tailor a school by "shuffling and making [it] work". For example, he suggested that if a school could decide to have slightly smaller classrooms "just focusing on numeracy and literacy, and then use their leftover square metres to have more creative learning space". Oscar suggested this type of decision on how to use the maximum space allocations laid out in the Building Bulletins was a "decision driven by the pedagogy of the school" and the "translation of that" into workable designs that still adhere to the government requirements is "driven" by the architects. This demonstrates the delicate balance between conforming to regulations and ensuring usability and flexibility for end users, which are both of significant importance in architecture (Imrie and Street, 2011; Gieryn, 2002).

Hugh, another experienced architect, also noted that flexibility for future teaching styles and pedagogies had to be considered in the design because "the next head teacher or the next change in thinking about educational principles will want to shake it all up". This is reflective of criticism directed at the Priority School Building Programme (PSBP) for lacking the scope for flexibility in the design process and for a tendency towards standardisation (Plotka, 2016). This lack of inherent flexibility in the design process relates back to the risks discussed above, particularly given the changing nature of both school design and teaching pedagogy dependent on the social and political landscape (Imrie and Street, 2011).

Along with the intricacies of teaching and the relationship of different subjects with their physical classroom spaces, teachers and architects also discussed outdoor learning and opportunities for physical activity as of high importance. There was a consensus amongst participants that outdoor spaces hold significant pedagogic importance, which resonates with the research discussed earlier relating to the importance of children having outdoor and active learning opportunities and access to quality outdoor spaces (Brock et al, 2013; Broadhead et al, 2010).

Aside from these general comments on how pedagogy affects broad spatial design choices, several architects discussed specific projects which they found were influenced heavily by the schools' pedagogic principles and ethos, as well as some discussion of subject-specific considerations. Subject specifics were also discussed in great detail by teachers – what they need from their specialist areas and whether or not the spaces they have provide that. Teachers also discussed how teaching styles and pedagogies more broadly across humanities and other subjects are impacted by the spaces available.

Subject Specifics

Many teachers discussed the functionality of their classroom space in relation to their specific subject area. This discussion came mostly from secondary school subject teachers, whose subjects involved a practical element, although there were also related comments from other teachers and architects.

Teachers of Science, Technology and Engineering subjects were particularly concerned with how their classroom spaces functioned for their teaching needs. Allegra, Head of a Physics department, commented that it "can be a difficult balance to strike" in science labs, because "there's never enough space for the tools of teaching in labs, because all of the space is taken up with the practical equipment". Although this was a concern for Allegra, she was "more concerned that [her] room functions well for practicals quickly than [she is] with making some kind of more collaborative space" so ultimately, she felt that well-equipped practical space was the most important thing in her classroom. This comment is largely in line with general pedagogic principles in science teaching, as science subjects require different types of spaces for effective teaching compared with arts and humanities, including provision for technical equipment (Harwood, 2015).

Another science teacher, and Deputy Principal, Alina, had a slightly different perspective. In her school, changes had been implemented at the beginning of the COVID-19 pandemic to limit the movement of children around the school. This had resulted in pupils only using

the lab areas when they were doing a practical and using other classrooms for theoretical learning. This continued after COVID-19 restrictions were lifted, as her school found that it worked well. Alina found that behaviour management was much easier and “there’s a lot more flexibility in a classroom than in a lab”. She talked about “rearrang[ing] the tables how you want” and also commented that it was “easier for tests”. This example from Alina’s experience of the space impacting the behaviour management required, demonstrates practically that the design of space can affect the use of space in schools as has been shown by theorists in other contexts (Gieryn, 2002; Fox, 1997; Foucault, 1977). Compared to Allegra, Alina placed more importance on the need for the ‘tools of teaching’ the theoretical side of science to be easily embedded in the classroom. However, Alina was in the somewhat unique position of having the best of both worlds – access to the specialist labs and equipment for practicals, and the ability to teach theoretical lessons in a more typical classroom space. Allegra, on the other hand, had to teach both her practical lessons and theory-based lessons in the same lab space, which was not necessarily fit for purpose, as discussed in relation to Figure 2 above.

Interestingly, Allegra mentioned that the newer science classrooms in her school were less well-designed for practical lessons, which she felt was because “the emphasis [in the curriculum] is clearly towards teaching theory lessons”. In comparison, she noted that “the original labs… were set up so you were doing practical, because they expected you to do practical science every single time” and so for her “as they’ve gone forwards, they’ve degraded the use of labs”. At Allegra’s school, the newer science classrooms look “like a classroom with a kitchen work surface round the outside” so “now if they need to use gas or if they need to use electricity or if they need to use the water, they only have that round the outside of the classroom, which is not as good for practical lessons”. Allegra further commented that, given that “you’ve got a class of 30, because classes have got bigger” you would expect more resources and equipment in newer labs, but in her school “you’ve only got six sinks… because you’ve only put them on the outside”. She suggested that “clearly you’re not expecting to do an awful lot of useful practical work” and, for her, this was further evidence of “how the ethos of the science curriculum’s changed over the years really, between like the [nineteen-]twenties and now”.

Similarly, engineering teacher Eleanor discussed issues she foresaw in the next academic year, because of increasing class sizes and limited lab space. Her school’s DT and engineering space was designed with a workshop area, computer room and classroom – three separate but interconnected spaces. As an oversubscribed school, with an increasing intake each year, the school have had to implement a system where they are “gonna have three classes at a time, so there’s gonna have to be one in the classroom, one

in the computer room and one in the workshop". Eleanor thinks this will be problematic, because they "don't have chairs in the workshop" and so there will be no real option to do a mix of practical workshop and written work in one session. At the moment, they move freely between the spaces in lessons, when needed, because there is generally only one class timetabled at a time. However, for Eleanor's school, there is an impending new build, due to their increasing numbers and the need for additional school places in the area, so it may not be a long-term problem.

Several architects also discussed the specific design requirements for science and technology classrooms. However, in contrast to the discussions on teaching practices mentioned above by teachers, the architects' focus tended to be on physical safety elements and equipment. Oliver, a senior architect, explained that science classrooms "will need a certain type of door, a food room another type of door" and "science rooms have to have fire-protected doors". He also mentioned that in new school design, in the form of a large block around a central atrium space, the "science rooms were on the top floor… [because] they have lots of fume cupboards and things" and this allowed for easier ventilation access. On a similar note, Tim, a partner at an architecture practice, discussed a renovation he was currently working on, which involved converting some spaces into new science labs for a school. He explained that it was "quite tricky because… [of] the ventilation requirements". In this case, "the roof area's got asbestos, so you can't go that way, so you've got to go out through the façade," making for a complicated design. These contrasting examples go some way to demonstrate the difficulties with retrofitting specialist spaces, as opposed to designing a newbuild with these spaces already incorporated in the best position.

Iain, director of an architecture practice, also discussed the practicalities of equipment and positioning, specifically in relation to design technology (DT) and art spaces in the renovation of an independent school he was working on. However, he talked more about considering the use of the space and imagined end-user (Buse et al., 2017), rather than practical safety constraints as Oliver and Tim mentioned. He talked about considerations such as "how the pupils were gonna be moving around" and how the space could be made flexible and adaptable through having "the right kind of storage, the right kind of benching… computers that can be slotted down into desks". They also developed innovative solutions, by working with "headteachers who are really inspired and really want to push the boundary in terms of innovation and use of space". In one example, this involved "a textiles room with sewing machines right the way round the perimeter… [which were] all on hydraulic jacks so that they could be pushed down underneath the desk and be covered over". This allowed for the space to transform from practical space for sewing, to desk space for written work, allowing for an easy transition between the different necessary elements of the lesson.

Thinking back to Eleanor's engineering space discussed above, spread over three rooms, with separate computer room, standard classroom and workshop, this solution shows there are possibilities for making such classrooms more space efficient and flexible, without compromising on the availability of space for practical work. This space demonstrates how a space can be flexible for different users and styles in practice, in line with theories on interpretive flexibility (Gieryn, 2002). However, the construction requirements for this design would be costly, and so not an available solution for most state schools within the current funding streams.

Aside from the specific needs of technical and practical subjects discussed above, teachers also talked about how their classrooms helped, or hindered, their preferred teaching style in a more general sense or relating to humanities and subjects without a practical element. Often this related to flexibility in the classroom layout and the ability for the room to facilitate collaborative learning and group activities as well as individual learning and autonomy, which have been noted as an important features in classroom design (Gislason, 2009). Collaborative learning strategies are regarded as a valuable feature in contemporary teaching practice, as discussed above (see Gislason, 2009; Laevers, 2000), and require spaces that facilitate such strategies. Equally spaces that allow for quiet learning and concentration are also considered important and need to be considered (Burke, 2017).

Alina discussed reading and literacy as a significant element of her new school's design. She mentioned that they were able to open a library which they "didn't have space for" at the old site. They've "got a librarian now" and they use it during some lessons but also "kids [can] go and read… if they want to at lunch and at break, [and] it's a space we use after school for homework club". She particularly highlights this space as being "really important for their wellbeing", as well as commenting that "there's a big push in school at the moment for reading" and Ofsted are particularly focused on it. For Alina, the dedicated library was a space where pupils could pursue quiet reading and gain some autonomy in their literacy learning.

However, some teachers found their spaces did not facilitate this type of learning – Olivia, an experienced English teacher, found her classroom space restrictive, because "it doesn't really allow for much movement". She was often "aware that they spend all day sat down, quite often being talked at" and she preferred to have them moving around and discussing with one another, with this type of peer collaboration a well-established learning strategy (van Leeuwen and Janssen, 2019; Vass and Littleton, 2010; Leal, 1993). While she incorporated discussion and collaborative work as much as possible, she noted that "if you've got more than 20-odd kids that's quite hard" and if she wants them to pair up for discussion, then move on and talk with someone else "end up in little pockets of [the room]

where they can find space", so it is not an ideal set up. Beyond "asking them to address people on the table" the lack of flexibility in her traditionally laid out classrooms, with desks in rows, posed challenges.

Evan, Head of Maths, had a similar approach to teaching, but was able adapt his classroom space more readily than Olivia. Whenever possible, he would arrange the furniture in his classroom into "a horseshoe shape and then spurs coming into the room". This "helps for collaboration, because you work around [the room] or you turn them around" and they can discuss with other people and work in small groups easily. However, this still required rearranging and the classroom and furniture layout was not designed with this in mind. Evan and Olivia's schools (and classrooms) were both in older, although purpose-built, school buildings, with blocks and wings added on over the years to accommodate increasing class sizes and pupil numbers. Hence, it seems that their buildings were not designed with current teaching and learning practices and current class sizes in mind, and without considerations for the flexibility required of such spaces to accommodate changing norms and best practice (Gieryn, 2002).

Outdoor and Active Learning

Undoubtedly, outdoor spaces, or the lack thereof, were described as being of high importance to both the teachers and architects interviewed, particularly in relation primary schools and younger age groups (Gould, 2013; Stewart, 2011). Teachers discussed the practicalities of their outdoor and Physical Education (PE) spaces, with many teachers feeling that their schools did not have adequate spaces. Architects also explored the importance of the design of outdoor spaces, with many seeking to design useable outdoor space within the constraints of budgets and land.

As previously explored, outdoor space is considered particularly important amongst education professionals and researchers for early years and primary school-aged children (Constable, 2015; Knight, 2013; Stewart, 2011). Architecture practice Director Iain reflected on this, describing "the link with the outdoors [as] just vital… particularly at primary age". He explained that "this is reflected in most of the guidance, building bulletins, et cetera" and "there's a real drive towards making sure there's the outside space for each classroom". He also noted that it was not just about the outdoors, but about a "connection with nature, so… plants, trees, it's not just hard landscape". He felt this was particularly important both "for the kids' wellbeing [and] nature's wellbeing... supporting wildlife" and encouraging a sustainable

ethos. Similarly, architect Sasha espoused the “importance of being able to play outside, almost in the wild [of] nature”.

Iain’s practice had been involved in some projects involving creative and innovative solutions for incorporating outdoor space and nature in a sustainable way and with limited available space – a particular challenge, as discussed above in Section 6.3. This included “projects where the landscape has gone over the top of the building” with a planted roof and building sunken into the ground slightly to create a ground level green space over the top of part of the school building. Another approach Iain discussed, which has been adopted on other projects and by other practices too in recent years, was the concept of rooftop playgrounds for schools. He noted that, although “you’re not losing any landscaped area… [by] replacing them with slate or metal roofs,” rooftop playgrounds do “present some real problems”. Obviously, the most obvious of those problems is “the edge protection and how high you go on the edge protection”. There are solutions to this though, which provide safety and open space, such as the use of “a canopy that runs right around the perimeter” creating “a full height façade and roof… [with sheltered areas at the perimeter and then it’s open in the centre”. As discussed previously, this also relates to the analysis and management of risk in designing buildings generally (Imrie and Street, 2011), and more specifically spaces for those considered vulnerable, for example children or older people living with dementia (Buse, Martin and Nettleton, 2018; Buse et al., 2017).

Sasha also explored a project she had worked on, in which the design of the outdoor space was heavily influenced by the headteacher. She explained that “when we came across to meet the school head teacher” the importance of the outdoor space was apparent as it was “a boys’ school, there’s a lot of activities, [and] they’re always moving around”. In that school, they had the space to design an outdoor area which staff could “supervise from the building itself” and she explained that, once completed, you could “see the children… playing, and… being involved with nature, not just learning with their minds but also with their bodies”. This is reflective of the research indicating the importance of movement and access to the outdoors to improve learning outcomes (Stewart, 2011; Broadhead, Wood and Howard, 2010), particularly for boys (Maynard, Waters and Clement, 2013). Importantly, Iain commented that although “the ideal… [is] large open sites… [where] the classroom can just open out onto gardens outside”, as in Sasha’s example, in reality there’s an increasing need to build in cities and a “squeeze” on space. Hence, Iain’s practice has found that they’re “using rooftops much more as things become more dense” and this allows for the inclusion of outdoor playground space that would otherwise be lost.

Teachers also commented on the importance of outdoor space, echoing the sentiments of the research in this area that access to the outdoors and learning in outdoor spaces is

highly valuable, particularly for younger children (Constable, 2015; Knight, 2013; Gould, 2014). Mia, a 1:1 SEND teaching assistant at a primary school spoke at length about her school's Reception area – Mia's 1:1 pupil was not in Reception, but she was so taken with renovation work that had been in the Reception space that she wanted to talk about it. As part of ongoing work to renovate her school, the outdoor area for Reception (and the school's private nursery) had been redesigned, with "a really cute little picket fence" replacing a "metal fence… so that they weren't caged in", making for a "nicer atmosphere". This also meant that the younger children could be "at the picket fence… [talking to their] big brother or big sister" in the adjacent playground. Mia felt this was a "nice [way] to give them the safety without taking away the shared [aspect]" and also kept their toys safe from the older children who "don't respect them in the same way and don't look after them the way that reception children do".

In addition to the outside space, Mia's school Reception area had been redesigned inside too. She described the space in great detail and felt it was "a lovely space". There were shared classroom areas, a child-friendly kitchen, and "a wet floor area… [so] if they're making a mess it doesn't get on carpet… [and] they are just allowed to like go wild with it, when it's the time for that". They had also installed "glass doors that open straight into the Reception playground" so they are able to "use it all the time" and have time when there is free-flow movement between indoors and outdoors. This links strongly with the EYFS statutory framework and pedagogical principles around the importance of outdoor space, especially for young children (Constable, 2015; DfE, 2014b; Knight, 2013) and the strongly evidenced theories on learning and play in the early years (White, 2014; Broadhead, Wood and Howard, 2010). This is also demonstrative of the tendency for outdoor learning and active learning to be prioritised in early years over older age groups (Knight, 2017, 2013; Porter, 2017, Waite, 2017). Being active and outdoors links implicitly with learning through play, hence it is straightforward to apply the principles of outdoor learning to the early years (Gould, 2013; Stewart, 2011). Mia felt very positively about the changes that had been made in the early years spaces and found that they had "worked really well [and] it's so beautiful as well". Mia's emotive response towards the redesigned Reception space was indicative of the affective nature of built environments, as discussed previously (Lefebvre and Bononno, 2014; Pernau, 2014; Gieryn, 2002).

Assistant head of a primary school, and PE teacher, Vince expressed some envy in relation to outdoor provision, as a school "two miles up the road" had just "turned their front concrete playground… into Astroturf [artificial turf] and that is like the absolute dream… because now it's useable 365 days a year". Vince was comparing the other school's new Astroturf to his school's field, which would be unusable for a significant portion of the year for

sports, because of the Autumn and Winter weather rendering the grass field frozen or water-logged. This demonstrates the issues that can when outdoor provision is not fit for purpose or there are not adequate resources to utilise it effectively (Knight, 2013). Notably, Vince queried "how have they got that" because funding for such projects is hard to come by – as previously discussed, funding was raised as a problematic issue by many participants in relation to various aspects of their school buildings.

Alina spoke of similar issues with the usability of her school's outdoor space before moving into their new building. In their previous building, there were windows all around the edges of the outdoor space, which meant, for example, they "couldn't let them play football… because the football would have gone on the glass and it could have smashed windows". In contrast, their new building has a "MUGA pitch which [is] confined with a fence, so they can play football at break and lunch, we can do clubs, we've got a lot more space, and it's really opened up opportunities for PE".[6] Alina commented on how important she felt this was, particularly "for teenage boys that is really important, that having that space". Alina's strong comments on the importance of outdoor space in her secondary school were in contrast to the lack of comment on outdoor space by most of the other secondary teachers interviewed, who focused mostly on their classroom and teaching spaces. While existing research has demonstrated the importance of access to outdoor space and the value of outdoor learning experiences (Knight, 2013; Stewart, 2011; Siraj-Blatchford, 2009), as noted in Section 2.3.3, this tends to relate to EYFS and Key Stage 1, despite the significant benefits for all ages in having access to the outdoors (Bragg, Wood and Barton, 2013; Gunter, Almstedt and Janz, 2012).

In addition to the outdoor space at Alina's new school building, which was used for both organised sport and recreation at break times, they also had a gym and big sports hall with a range of high-quality equipment. She felt strongly that the inclusion of these spaces and opportunities within the new building had an impact on the behaviour of the pupils in the wider school environment and lessons. She explained that "there's got to be buy-in from the children, they've got to enjoy school" and "when they didn't have that space we didn't get that engagement from them," whereas in the new space they can be "a lot freer with some of [the] things" that they can do. She felt that it was particularly important as they are "quite a strict school… with strict policies on everything, like uniform, haircuts" and so it is "important that they still enjoy school… and enjoy being there". Alina's comments also relate to improving participation in education, and she specifically mentioned that the school noticed

[6] MUGA (Multi Use Games Area) fields are made from artificial grass and designed to be used for a variety of sports including football, tennis, hockey, basketball and netball.

an improvement in pupils' engagement since moving to the new school building as it gave them access to high quality spaces such as the outdoor space, gym and sports hall. Alina noted that this outdoor space and available space for physical activity was important for "teenage boys" in particular, which shows a consideration of the potential barriers to educational participation for teenage boys (Maynard, Waters and Clement, 2013) and she recognised the inclusion of these areas as an effective way to encourage participation.

However, even when schools have dedicated space for PE and sport, some teachers explained the issues they face if these spaces have not been updated or maintained. Vince, an Assistant Head, and Mia, a 1:1 TA, both commented on the sports hall at their respective schools. Vince noted that at his school "you've got the chairs for the dinner time… down both sides… the shutter for the serving hatch there" and so, for example, "you couldn't teach basketball there, which is an indoor sport" because there is not enough free space. He also commented that, although "it's fine for dance, gymnastics, a lot of motor skills stuff in key stage one" the teachers have to be careful not to "let them get too close to the chairs" because it could cause them to "fall or slip". Similarly, Mia explained that her school's hall has "the old pull-out things for PE, where you do… gymnastics" (see Figure 7 below) and they do not use them because the staff "don't think either of them are tested" for safety. Mia found it frustrating, "because they're… attached to the wall they still take up space" and so limit what else can be done in the hall. Vince also noted similar experiences, having "taught at five [other] schools". He could not "think of any school where there hasn't been… a hazard around the edge of the hall". He explained that, in his experience, the hall is "normally… multi-use, and even if they're not multi-use they [still have] … old school climbing or something like that" in the way, as at Mia's school.

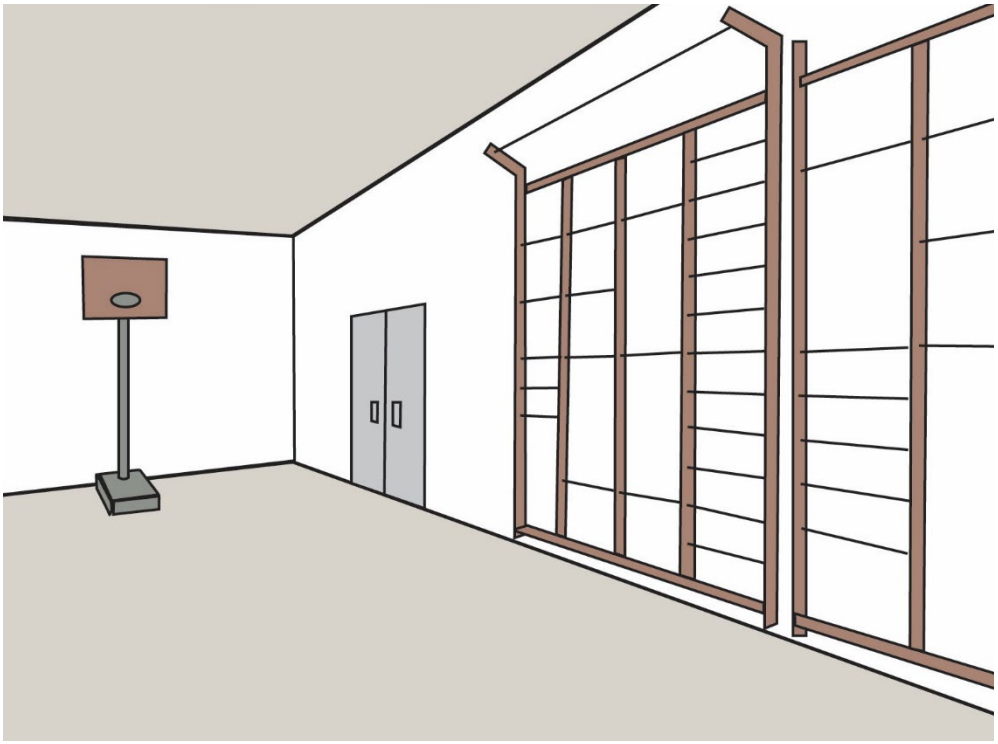

Figure 7: School sports hall with climbing apparatus - Teaching Assistant Mia

It is clear from the experiences teachers shared, that their spaces can significantly hinder their approach to teaching, particularly in relation to specific subjects, activities and pedagogic approaches to teaching. Despite the budget and regulatory restrictions inherent to the design and construction of school buildings (and all public buildings) being directly linked to contemporary social and political discourse (Imrie and Street, 2011), there are often disparities between prevailing pedagogic and social principles and the funding and regulatory framework which school buildings must fall within. In addition, while many architects expressed a desire to make the school buildings they designed as flexible as possible, this was often challenging within the constraints of funding and regulations. This often lack of flexibility in the design was felt practically by many teachers interviewed, who noted aspects of their spaces that they would ideally use differently if the flexibility existed. This notion of using spaces in ways other than, or as well as, it was intended resonates with theories on interpretive flexibility and, further, to the need for schools to be adaptable to the inevitably changing landscape of political and social discourse surrounding teaching, learning and childhood.

6.2 Ethos: The ethos of the school reflects the domestic friendliness of the building

Separately to the teaching pedagogy of individual teachers and across subject areas, participants also discussed elements of their school buildings in relation to the broader feeling of the school – it's *ethos*. For some teachers, they described their school as being 'friendly', whereas others felt their school had a more formal or strict atmosphere. Many teachers felt that the way their school spaces were designed evoked either feelings of friendliness or a more corporate atmosphere, and for some this directly reflected the expectations the school had for its pupils and staff. It was clear that individual classrooms were often an extension of the overall feel of the school, for example how noticeboards were populated and the types of spaces given priority. Teachers often reflected on the ethos their school espoused, such as striving to be particularly friendly, inclusive, or aspirational. Statements on ethos can also often be found on school websites, with sections entitled 'Ethos', 'Mission Statement' or 'About Us', introducing a school's overarching ethos to prospective parents and pupils. These discussions relate strongly to research in other contexts and how the atmosphere of a building can affect the feelings and day-to-day experiences of its users (McLaughlan and Willis, 2021; Martin, Nettleton and Buse, 2020). They also relate to the notion of schools as communities and as having significant impact on the subsequent inclusion of children into society and the progress of society more broadly (Long, 2019; Booth and Ainscow, 2002; Dewey 1990).

Additionally, some participants mentioned how their school's ethos translated into the wider community, transforming the space in which the school sits and providing spaces for community use, which has been discussed previously. For some participants, this ethos of fostering community cohesion and impacting on the wider community atmosphere was a large part of their school's identity, and significantly impacted how their spaces were designed and used. Staff spaces were also given significant thought in interviews, with discussion of both well-thought of and welcoming staff spaces and a lack of adequate space for staff. Again, this relates to research in other contexts, such as medical and care facilities (Buse, Martin and Nettleton, 2018).

Atmosphere

Many of the participants talked about how their spaces made them (or others) feel, or the atmosphere created by the built environment. Participants often felt that their school fell into one of two broad categories, informal/friendly or formal/business-like. Participants identified positives and negatives to these different atmospheres and discussed how the buildings

made them feel. Participants' discussions were evocative of ideas of humanist architectural theories and the physical and emotional response buildings can elicit in us (Scott, 1980).

For Evan and Allegra, Heads of Maths and Physics respectively at the same school, their school "feels friendly" and the "building reflects the ethos of the school, or the ethos of the school reflects the domestic friendliness of the" building. It was clear from the conversation that they felt this was an advantage, and generally their school had a friendly atmosphere, both amongst staff and between staff and pupils. This sense of the affective experience of buildings has been explored in other contexts, including care homes (Martin, Nettleton and Buse, 2019) and paediatric hospitals (McLaughlan and Willis, 2021; Adams et al., 2010). In this research, similarly to Evan and Allegra's comments on their school, there is a general desire for these buildings to offer warmth and friendliness in conjunction with the necessary functional elements (for example, medical equipment).

In contrast, Alina discussed her school's atmosphere, noting that all of the school buildings within her multi-academy trust have "quite a corporate feel to them". She explained that "that is the point… to make them feel corporate and professional" and the buildings help to "create that ethos" of professionalism. She described her school's "very specific… mission" which was "to achieve… really high results… in the top five percent". The multi-academy trust that her school is part of operates "in very disadvantaged areas" and they aim to "make our students feel that they are on a grammar school kind of level". Alina's passion for her school's ethos and way of achieving its aims was clear, and she felt strongly that "having that kind of professional corporate feel can be quite empowering" and for her school's "specific goals and visions, it… works". She explained that by showing "these students that this is a professional environment, this is how you behave in this professional environment" and she believed that by fostering that culture amongst staff and pupils, by creating that environment, they were helping their pupils to gain "a certain level of cultural capital" that is needed "if you want to go on… [to] study at the best universities". Alina refers here to Bourdieu's theory of cultural capital – often intangible resources, such as ideas, taste and embodied practice, gained through early learning (Bourdieu, 1973). Alina's suggestion is that pupils can gain certain types of cultural capital from their school environment and possessing a particular type of cultural capital can impact upon their educational opportunities and, ultimately, social mobility, which is reflective of the work of Bourdieu and subsequent researchers (Reay, Crozier and Clayton, 2010; Reay, 2006). However, Alina recognised that the environment her school aimed to create was "not for everyone" and that because the "building does create that feeling… if people come to see us… they know what they're in for" and can decide whether it is the right fit for them and their children.

Cutting across schools whose teachers described them as ‘friendly’ and ‘corporate’, many teachers explained that their schools had adopted a general ethos of inclusivity. The basis for this approach to education is robust and inclusive practice can come in many forms and values the inclusion of all pupils (Long, 2019; Booth and Ainscow, 2002). For example, Assistant head Vince talked about his school’s “bubble room” which is “for children with more sensory needs”. He described the room as having padded walls and “vibrating spots… a light tunnel… something projected on the ceiling… [and] bean bags”. He felt the space helped “some of our learners when they need to calm down or they just need five minutes away” from the busyness of the classroom. Similarly, Mia, a 1:1 SEND teaching assistant, talked about a dedicated spaces in her school for pupils with additional sensory, social and emotional needs. She explained that her school has adopted the thrive approach, and they have a thrive room with dedicated space for their thrive practitioner and other staff to support pupils with additional needs. Within the thrive room, they also have another space that Mia calls the “quiet room” and she explained that they “don’t put the big lights on in the quiet room”. In the outer part of the thrive room, there are tables and sofas, and “depending [on] what it is that the kid has needs for” they can use different parts of the room. Mia used this space every day to support her 1:1 pupil – she would “meet him at the office and… go down there [to the thrive room], have a check-in… start our day off really mindfully”. As well as using the space to help orient and ground pupils at the start of each day, Mia also noted that the room was used as “somewhere they can go to escape… when they’re feeling overwhelmed”.

Mia was clear that this space allowed for pupils to access the educational setting, explaining that her 1:1 pupil can “use the sensory things in there and he can get himself to a place where he wants to interact with me again, and then we’ll be able to get back into class”. She also suggested that the alternative, if the school did not have this space would be “running up and down the corridor or causing trouble or accidentally distracting the others”. She also emphasised the need for this space to be away from the other pupils, as “children don’t want to be seen to be dysregulated… they don’t want to be sat in the classroom or be seen in the corridor, they want to have that bit of space, that privacy”. Although following a specific approach as mentioned – the Thrive approach – which follows the specific work of psychotherapists and educationalists (for further details see Bonitto, 2019; Gibby-Leversuch, Field and Cooke, 2019), the thrive spaces available in Mia’s school can also be related to Burke’s work on quiet spaces in school, such as reading nooks, offering children a choice and a place to escape to (2017).

While inclusion can be seen as relating to pupils with SEND, and the focus of many teachers when discussing inclusion was on pupils with SEND, inclusion and ensuring

effective participation in learning encompasses all pupils and pupils can have barriers for reasons other than physical disability of special educational needs (Ainscow, Booth and Dyson, 2006). Architect Oscar also mentioned inclusivity from the design perspective more broadly, “in terms of trying to make sure that the new buildings… the new schools [they design] … are as well placed as possible to be as inclusive as possible”. This was in response to the increasing social and educational recognition of the importance of inclusive practice in schools and limiting barriers to participation (Long, 2019; Booth and Ainscow, 2002). To achieve this, Oscar discussed how they would be “really cognizant of visual distraction, and just how visually busy classrooms are, because that can have a really big impact on some pupils and their ability to access education”. Oscar was also keen to ensure the schools his practice designed “have really good acoustics [and] really high levels of acoustic absorption” which he felt benefitted all children and staff.

Eleanor, a newly qualified engineering teacher, also had significant experience of implementing an inclusive ethos in her mainstream setting. Along with a high proportion of pupils with additional needs (including neurodivergent diagnoses, learning difficulties, and behavioural challenges), Eleanor’s school also had a significant proportion of pupils who were refugees or had immigrated to the UK for other reasons, with added barriers to their learning including English as an Additional Language (EAL) and cultural differences. Eleanor explained that “there’s a lot of disadvantaged students in the area, along with EAL students” and the school has “a lot of students from Syria… refugees”. She went on to say that she teaches “a lot of children with complex needs… a lot of children in care, and on PP [Pupil Premium] plans” and described her school intake as “very complex, filled with different students from everywhere”. She described her school as inclusive and talked about various strategies employed across the whole school to meet that aim, and her perceptions are reinforced by school data. She explained different practical ways the school fosters an inclusive atmosphere, including areas for pupils to go if they need to be away from the classroom and “in engineering [they] have Arabic on all of [the] signs” to help their high proportion of Arabic-speaking EAL pupils both to read the signs and to feel a sense of belonging in their school community.

In the case of Eleanor’s school, they achieved much success in regards to their inclusive approach – as a direct result of their inclusive practices, the school had become heavily oversubscribed and were awarded funding for a new school building, with work due to commence shortly after the time of interview. The principles of inclusive practice and the importance of encouraging the full participation of all pupils was central to the ethos of Eleanor’s school, as per her own comments and as demonstrated by the school’s growth and success in the local community (Long, 2019; Booth and Ainscow, 2002).

Separately to the internal atmospheres created for pupils through interior design, as discussed above, some teachers talked about how the ethos of their school was heavily centred on fostering community spirit beyond the school gates. This often extended beyond the direct school community (teachers, pupils, parents) and into the wider local community (those living near the school). There were several discussions around how this ethos was incorporated through the school buildings themselves and the design of outdoor spaces. Going back to Alina's school, she explained that it is "in a really disadvantaged area… not very affluent at all… [on an] abandoned plot of land that had become like a tip". In the process of clearing the site and building the school, her school trust put a heavy focus on making the area better for the local community. Alina commented on how proud she was of the school (see also Figure 8 below):

> *Our building is brand new, it looks really lovely from the outside, they've planted plants, flowers outside of it in the entrance bit, and so when you drive through this area and you see that school, it's like, you know, it's like oh, it's a bit of a status symbol, and it's hopefully gonna lift the aspirations in the area as well and show them that their children are achieving well.*
>
> *Alina, Deputy Principal and Science Teacher*

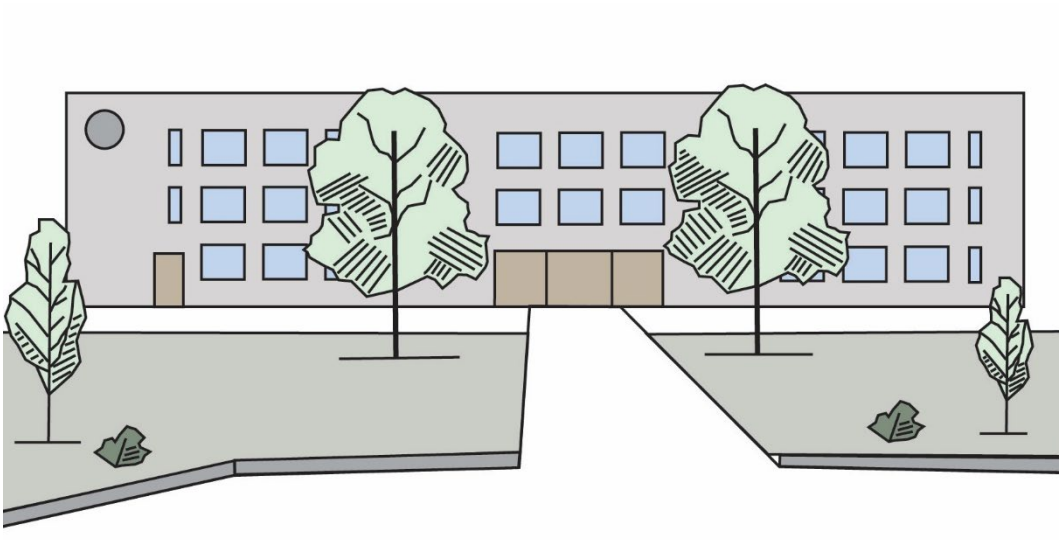

Figure 8: Illustration of new school frontage - Deputy Principal Alina

This idea of raising the aspirations of pupils from disadvantaged backgrounds was the backbone of her school trust's ethos and guiding principles, as discussed above. She further explained that their aim was "to help the students, children that might never have had some opportunities, to really get the best grades they can and really lift them, give them the best start in their life". She felt the new building and its design "makes [pupils] proud of their school" and helped the school to maintain their ethos and achieve their aim of providing pupils with the cultural capital and educational experiences afforded to those from more affluent backgrounds. Additionally, Alina's school is faith-based and so they "have a prayer hall… that definitely came into the design, and it's a good design in that way" for ensuring inclusion and a welcoming feel. The importance Alina and her school placed on inclusion and encouraging participation of all pupils from all backgrounds is demonstrative of effective inclusive practice and approaches for overcoming barriers to participation such as cultural and socio-economic differences (Long, 2019; Booth and Ainscow, 2002). Although Alina had some criticisms of her new build school's design in relation to futureproofing, as mentioned earlier, she felt strongly that the school's ethos was embedded effectively into the design.

Similarly, Olivia's school had a focus on their building being a part of the wider community, and she "assume[d] that part of the reason [her school has] never gone for some sort of flashy newbuild, that they've kept a lot of the original features, is because people do like it… it's well known in the area for its very traditional look, despite not having the draconian traditional values". In contrast to Alina's school, in which the community lacked cohesion and the new build school acted as a facilitator for that community to come together, Olivia's school is already part of a well-established community, and so change could be seen as detrimental to that community cohesion. Additionally, Olivia's perception that the local community is emotionally attached to the original features of the school also relates to the emotional and physical responses to architecture explored by Scott (1980). In the case of Olivia's school, the original building is neo-classical in style, with a calm and simple grandeur (see Figure 9 below).

Figure 9: Neoclassical style school building - Teacher Olivia

For both teachers, their school buildings reflected an ethos that prioritised community integration and recognised the benefits of the community being invested in the school. For Olivia, the benefits were mainly that the community nature of the school "attracts a lot of parents" and acts as "a selling point for the school". Whereas, for Alina's school, the community integration largely served as a way to support the school's central ethos of their pupils achieving the best academic results they were capable of.

Staff Spaces

Closely linked to the different atmospheres discussed above, a particular point of note for many participants were their staff spaces. Some teachers mentioned having thoughtfully designed staff spaces, although this was not always the case with many feeling that their staff spaces were not adequate for the needs of their school. The reasons behind specific design choices for staff spaces was also discussed by some participants, particularly those in senior leader positions.

For Headteacher Liam, the general layout of the school was of paramount importance and was something he worked to alter when he took over as head at his current school, with a particular focus on the accessibility of staff and the position of administrative and office spaces. For the ethos and feeling Liam wanted to create in his school, he felt it was important to have "the headteacher right in the centre… [and] the senior team dotted around in different places". For Liam, this was about staff the senior leadership team (SLT) having "a level of accessibility to staff and students". The school's design when he arrived was not suited to this style of leadership and embedding this type of ethos into the school, and so he made near-immediate efforts to alter the layout – for example, changing the use of some of the central spaces, and converting them into offices for the SLT. As well as SLT offices, he

felt strongly that the SEND office and library should be “right in the centre of the school,” suggesting that he felt accessibility of these resources – people in SLT, ancillary staff and spaces – was of high importance for fostering the type of inclusive atmosphere he was aiming for, for the school.

On a similar note, Alina talked about the design and layout of her school’s staff spaces, commenting that they did not have a large, communal staffroom for staff to have lunch and socialise. Rather, they – her school’s SLT and the wider academy trust’s leadership – preferred to encourage teachers to “either sit with the students or sit near the students” in the canteen, to show they were accessible to students during break times. Primarily though, she mentioned that part of the reason for their school deciding to have “small workrooms rather than one big staffroom is because it allows people… the space to get on with their work”. She explained that “when you have a big staffroom you create more of a social environment… [and they] didn’t necessarily want that”. The reasoning behind this was double-edged, with Alina explaining that “as an SLT member, with staff you have got to be very careful” and that the social environment created by a large staffroom “might make people less focused” and less productive in their work. Although Alina also pointed out that “most teachers will want to get things done during the day and then go home” anyway, so as not to have to take work home with them, so providing staff with the space to complete their work during the day was considered to be of benefit for most staff.

Olivia, an experienced English teacher, also commented about a school she had worked at where there was no staffroom. Similar to Alina’s school, this was an intentional design choice – “they didn’t put a staffroom in when they did the newbuild, they went for the whole thing of ‘staff should eat and mingle in the same area as the children’”. This was not received well by the staff though, and “just led to people sitting in their offices… eight people crowded in one office”. The implication in these discussions relates to the emotional labour involved in the teaching profession, as with other customer facing roles – where, for example, pupils and parents are customers, and in hospitals the patients and their families are customers. The impact of this emotion work on those in service industries has been explored extensively in the work of Arlie Hochschild (1983), with subsequent researchers relating the concept to the caring and teaching professions (for example, see Bodenheimer and Shuster, 2020; Theodosius, 2008; Isenbarger and Zembylas, 2006). The performative nature of teaching as a profession and skill is similar to the performative nature of the service professions explored by Hochschild (air stewards, for example). Teachers are playing a role with multiple facets and are generally expected to have their ‘teachers hat’ on, or be showing a professional façade, when they could be in the presence of pupils or parents. In the context of the

schools described by participants above, where teachers may not have a private staff space to retreat to, the emotional labour required is intense and prolonged. If expected to eat and "mingle" with pupils even at break times, there is little respite during the working day. This has been observed in other contexts such as care work, where staff can be expected to always be available and have limited opportunity for respite, even when faced with challenging situations (Buse, Martin and Nettleton, 2018).

Many other secondary school teachers commented that they, and other teachers at their school, tended to spend break times in their classrooms or department spaces, working and collaborating with others in their department. However, this was not commented on by primary school teachers, which suggests they did not view this as an important aspect of their school buildings. This can perhaps be explained by the generally smaller nature of primary schools and so expectations for the provision of staff spaces are likely lower. Head of Maths, Evan, explained that his school has a similar setup, with small staffrooms in each department. In his department "there's a maths staffroom… [with] tables in, it's got a couple of workstations, it's got a fridge, microwave, sink… but it's also got a whiteboard on one wall where we sit and discuss maths and talk about maths problems". Allegra, Head of Physics at the same school, noted the same thing in her department, although their Science staffroom was "actually one of the prep rooms" but the technician "doesn't mind at all that that tends to be where the science staff congregate" because there are "quite a lot of big prep spaces" available. Both Evan and Allegra found this setup to work, particularly for their subjects and ways of working, although their school had also invested in a large main staffroom space. This is further evidence of the tensions that can emerge between the design of space and the use of space, and the strategies used by people to create flexibility in their spaces (Gieryn, 2002).

The main staffroom space at their school had been refurbished a few years prior, with Evan and Allegra respectively describing the space as "styled like a high street coffee shop" and having "an industrial vibe". The school has put in "loads of big brown leather sofas" and "funky lights where the cable comes down and then it goes on a hook and it's got a glass lampshade," which Allegra thought "looks really cool" (see Figure 10 below). Interestingly, the school had also made efforts to provide private outdoor space for the teachers, in the form of an enclosed outside area which could be reached through doors off the main staffroom. Although Evan sarcastically described this space as "a little area that's like a prison training yard", Allegra spoke more positively of the space. She explained that "it's got really tall fences enclosing it, and it's a relatively small area, so it has a slightly odd feeling to it" but she elaborated that the school had used fencing with "translucent signs, so when you

look from one side" you cannot see in, but "when you're sitting in the staff area you can see through the woven material". The fencing was designed to provide privacy for the staff, and also because "it is at the front of the school, so it probably wouldn't look terribly professional if [the staff] were all sitting sunning [themselves]". Allegra thought the space was "quite nice" but that "a bit of planting will help" it to be more useable and feel less enclosed.

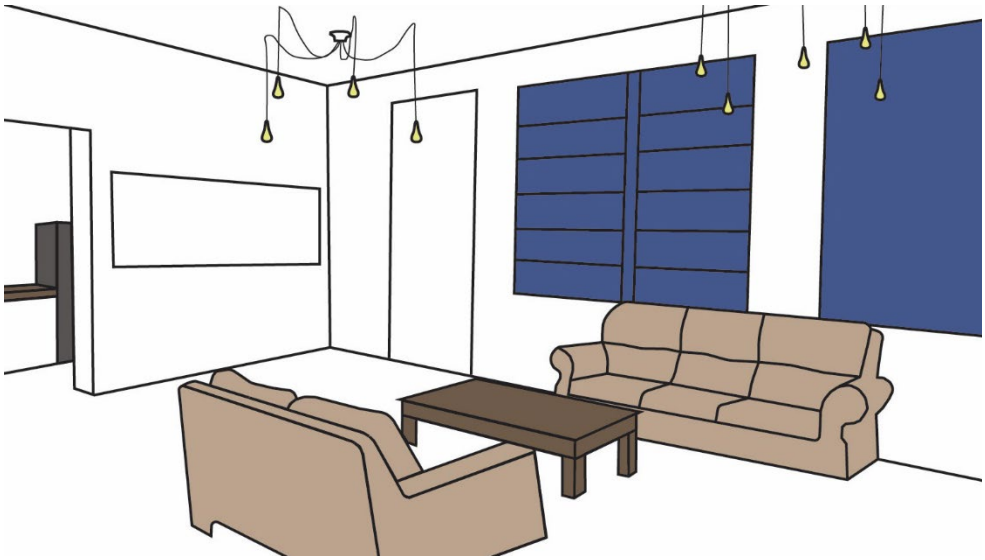

Figure 10: School Staffroom - Teachers Allegra and Evan

In contrast, other teachers who mentioned using smaller, departmental staff spaces, or spending break times in their classrooms, did not have an adequate central staffroom to use even if they wanted to. Lauren, a teacher at a PRU, explained that her school had "only had a staffroom for two years" and even though they have "got two staffrooms now… neither of them are fit for purpose". She explained that "one's being used as a kind of storage area… and the other one has been built new but it's not finished yet, so it's locked". Although she mentioned that "most of [their] staff don't take a lunch break… if [they] actually did there's nowhere to go to have a lunch break". She felt strongly that this lack of consideration for staff needs and space was a problem with the planning and delivery of new and refurbished school spaces – there should be "space for everyone, not just pupils". This relates back to the lack of end-user consultation discussed above.

Similarly, Engineering teacher Eleanor mentioned that if teachers at her school wanted to use the staffroom for breaks it would "not [be] comfortably big enough" for most staff to be in there at once, although "a lot of TAs use the staffroom". This was not a significant issue for Eleanor or other teachers at her school though, as she mentioned that "everyone just sadly sits in their classrooms and eats, trying to do work at the same time," which relates to Alina's

comments about most teachers wanting to get work done during breaks. This sentiment was also echoed by Vince and Olivia in relation to their current schools. Vince mentioned that that use of the staffroom depends on “how staff work, if they’re marking at lunch they might dip in and out” and Olivia explained that although “the staffroom does get used… [and] a lot of the TAs use it… in English we tend to eat in the office… [and] other people stay in the classrooms”.

So, the use of staffroom spaces varies between schools, which is perhaps reflective of an element of their ethos and leadership team. While some teachers mentioned not having an adequate staffroom space, many talked about using classrooms or department offices despite having access to a dedicated staffroom. Primary school teachers interviewed made little mention of their staff spaces, perhaps showing they were not viewed as a key aspect of their school environment. Broadly speaking, the lack of thought or availability of staff spaces may be reflective of a wider ethos of working through breaks – or the necessity to do so due to heavy workloads (for example, see Jomuad et al., 2021; Bodenheimer and Shuster, 2020; El Helou, Nabhani and Bahous, 2016). This variety was captured by Fiona, an experienced architect, who explained that within the building bulletin limits and standardised square metreage allowed for their new build designs, they can adjust the plans based on an individual school’s “way of operating,” so “one school [might have] a central staffroom, whereas some other schools might have five little workrooms for each department”.

6.3 Conclusions

It is evident from participant accounts that the built environment can significantly hinder or support different pedagogical practices and effective teaching, learning, and behaviour management. These accounts are significant for understanding how pedagogy is embodied or embedded into building design, with sociological research in the field of healthcare finding similar embodiments of the changing meanings of health and illness reflected in hospital design (Prior, 1988). Many teachers offered examples of how they had adapted their spaces to work more practically for their and their pupils’ needs. This demonstrated an ability to adapt and use flexibility within a space, for example, changing the layout of furniture or even painting over windows as needed in Allegra’s case to create a pitch-black Physics classroom. This presented a particular challenge for teachers such as Allegra, whose subject required specialist spaces and equipment. The interpretive flexibility displayed by teachers here reinforces the need for school spaces to be inherently flexible and adaptable in order to function effectively for different users and as the needs of users change over time (Gieryn, 2002), including changing pedagogies and theories on learning. This is particularly

important to acknowledge at the design stage, given that several teachers noted that their spaces were not adaptable in the ways needed, and instead they had to alter their teaching practices or lessons in less-than-ideal ways, such as using corridor space for group work in Olivia's case.

Architects concurred on the significance of school ethos in informing building design, with several architects mentioning the ways in which a school's ethos influenced their design. Although, architects also noted the importance of a flexible approach, acknowledging that shifts in school leadership and in political discourse would impact a school's ethos and teaching pedagogy over time, and the building would still need to work for these changing practices (Imrie and Street, 2011; Gieryn, 2002). Consequently, there was a strong emphasis on the need for flexible and adaptable spaces that can accommodate evolving pedagogical approaches. However, there were compelling critiques from some architects in relation to the regulatory framework and funding allocations leaving little room for designing for flexibility and adaptability. As with other themes then – *participation* and *risk* – much of the discussions on the issues facing the design of school buildings came back to a lack of funding to lay the groundwork for futureproofed and user-friendly school buildings, and similar concerns were echoed by teachers from different school phases and from architects.

7 Conclusion

Through exploring the experiences of architects and teachers in in-depth interviews, this thesis has presented an understanding of how architects and teachers envisage and experience school building design. The dialogue between these two stakeholder groups provides rich insight into the design process and lived experience of school buildings, contributing to interdisciplinary areas of research in sociology, architecture and education. Drawing on previous research (including Martin, Nettleton and Buse, 2019; Buse, Martin and Nettleton, 2018; Woolner, 2014; Shernoff and Csikszentmihalyi, 2009; Gieryn, 2002; Arnstein, 1969), this thesis provides new reflections on the importance of architect and teacher contributions to the process of school building design, with participant reflections on areas of participatory design, risks and challenges, and the relationship between space and pedagogy. The researcher's use of line drawings in the analysis process and presentation of findings and the insider–outsider perspective has also added significant value to the research and built upon previous work (Brown et al., 2021; Devotta et al., 2016; Costley, Elliott and Gibbs, 2014).

While the research had limitations in relation to both scale and COVID-19 mitigations, the final research design and rich data gathered, along with the in-depth analysis process, has produced valuable insights and contributions to knowledge around school building design and related areas. The opportunities for future research are clear, particularly in relation to research with children and young people, further research with a broader group of teachers, and the potential for ethnographic research following the design and build of process from beginning to end. Further research, providing a greater quantity of data, could also result in implications for policy and recommendations for best practice school building design processes and programmes.

7.1 Summary of findings

Education professionals Liam and Eleanor want "the basics done well" and for there to be "space for everyone". This represents in the most succinct way the views of the teachers and school staff who participated in this research. Architects' views were more design-focused, with a desire for innovative and creative design solutions to make school buildings more sustainable and futureproofed. While in many ways the two participants groups shared aspirations for the future of school buildings, with teacher Lauren noting that in an "ideal

world, you would want something futureproofed", there was a distinct difference in the basic needs that teachers discussed and the ideas and ideals that architects explored. This perhaps represents the differing perspectives and everyday experiences of the two groups – architects as experts in spatial design and building regulations, and teachers as experts in educating and interacting with children every day and making their school buildings work for them as best they can.

The direct contrast established through these interviews between design ideals and on the ground experience demonstrates the need for collaboration between school staff and building designers in order to create functional spaces for teaching and learning. As noted in Chapter 4, while architects value, and are expected by both RIBA and the DfE to undertake, consultation on school building projects, this took many forms and often provided only a weak form of participation from the perspective of teachers and school, relating to the middle and lower rungs of Arnstein's ladder (Arnstein, 1969). The lack of guidance specifically from the DfE on how and the extent to which user consultation should take place in the design process of a school building leaves this up to the architects in each case – in line with contractual agreements and budgets, as often architects are working for building contractors (Buse, Nettleton and Martin, 2018). Inevitably this results in significant differences between projects. Additionally, architects interviewed had differing ways of implementing RIBA guidance on user consultation, as even the more detailed RIBA guidance is open to interpretation and adaptation. Notably this was another area of contrast between the architect and teacher participant groups – architects generally noted the importance of stakeholder engagement and consultation, but the teachers interviewed had experienced a lack of consultation when it came to their school buildings. A seemingly overarching theme, and one which was almost universally agreed upon by participants, was a lack of funding for school buildings. This perhaps offers a broad explanation for the areas of difference, whereby, although architects indicated that they ideally want to engage in serious collaboration with school staff, the practicalities of doing so in a meaningful way were often referred to as too costly and budgets restrict what architects felt they could achieve.

While existing research explores the importance of the built environment of schools, as it relates to learning, inclusion and childhood development (including Brighouse, 2019; Long, 2019; Plotka, 2016; Woolner, 2010; Burke and Grosvenor, 2003), this research has sought to explore the relationship between the built environment of schools in the UK, the experience and insight of architects, and the lived experiences of teachers. This has built on work from an interdisciplinary range of researchers. The basis of this research in understanding how buildings affect their users has drawn on the work of researchers such as Gieryn and Foucault (Piro, 2008; Gieryn, 2002; Foucault, 1977), while providing new insights into how

school buildings are navigated in practice by teachers. The dialogue between architects and teachers, and the similarities and differences of their experiences, also provides important depth to the work of researchers such as Sherry Arnstein, and others who have explored participatory design and user consultation (Woolner et al., 2007; Arnstein, 1969). This research also draws on ideas of childhood and perceptions in society of other vulnerable groups, such as those with disabilities (Burke, 2019; Boys, 2014; Imrie and Hall, 2001; Jackson and Scott, 1999). This provides a contextualised understanding of the work presented here, including considerations of how buildings are designed for groups considered vulnerable and how accessibility is often an afterthought (Long, 2019; Buse et al., 2017; Boys, 2014).

In order to provide a new perspective to existing research, this research explored the overarching question: How do architects and teachers envisage and experience school building design? Based on the grounding of this research within an interdisciplinary background, the specific aims of this research were as follows:

1. To understand what architects and teachers want from school buildings.
2. To examine the commonalities and tensions between architects' design intentions and teachers' lived experiences of school buildings.
3. To explore the current 'moment' in the history of the UK's school building estate.

In order to address the above aims and research question, I aimed to gain insight into the lived experiences of participants to answer the following specific questions:

Architect participants:

1. What are the main considerations when planning a new school building?
2. What are the particular challenges of designing school buildings?
3. What is the process for designing school buildings and how has the design and planning of school buildings changed over time?
4. How do architects feel school buildings affect their users?

Teacher participants:

1. How do teachers use their classrooms and how is this affected by the spatial design?
2. What changes would teachers ideally make to their school spaces and how have they adapted them?
3. How do their school spaces affect their teaching practice, pedagogy and experiences of teaching?

4. How do teachers feel about their school spaces?

Reflecting on these questions through the project pointed to two distinct perspectives, as noted above. The architects' perspective provided a detailed understanding of the factors of importance in school building design, including their views on the importance of sight lines for behaviour management, spaces that were welcoming and functional for learning, and the limitations of budgets and government regulations. In particular, many architects placed an importance on sustainable building design, including in their school building projects, which strongly correlates with wider society and especially children's engagement with climate change activism (Parker, 2020). They also offered reflections on particular areas of challenge and risks, which often included budgetary restrictions and having to find creative solutions provide what schools needed while staying within regulatory requirements. Architects interviewed had a clear sense that the design of school buildings had an impact on teaching and learning, and some architects related to this to providing spaces for innovative educational pedagogies and some had worked closely with schools to provide spaces that were in line with their educational ethos.

Teachers' perspectives offered practical narratives of how school buildings were used and how the building design affected their everyday experiences of their jobs and their interactions with their pupils. Often, teachers referred to the adaptions they had to make, either to their own teaching styles or to their physical classroom spaces in order to make the space work for them, demonstrating interpretive flexibility in the use of their buildings and a mismatch between the initial design and their requirements as users (Gieryn, 2002). This related to many teachers indicating that their ideal school largely boiled down to having basic aspects in place, in a child-friendly way, which could be kept well-maintained and functional. Some subject-specialist teachers, such as science teachers Alina and Allegra also commented that their technical classrooms were not always functional and with the suggestion that "they don't consider a scientist or a science teacher" in the design process. Interestingly, although the teachers interviewed were using their classrooms daily, many commented that they had not explicitly considered the spatial design of their schools until taking part in this research. This relates to how the final product becomes a sort of black box for the process of negotiation of the design, and these processes become hidden from view (Gieryn, 2002). However, all teacher participants discussed their school spaces and classrooms at length and had significant and valuable insights to give related to the practicality and functionality of their spaces. This demonstrates that teachers are valuable voices in the design and planning of their school spaces when given the opportunity to contribute, further evidencing the need for consultation between building designers and

school staff to be valued and more than tokenistic in nature. While the level of consultation varied in participants' experiences, the tendency was either for information to be provided, but no real consultation to take place, or for school leaders (such as Headteachers or Business Managers) to act as gatekeepers in the process, which teachers felt afforded them with little to no control over the end result. Both teachers and architects expressed a desire for more direct engagement, although budgets and practicalities seemed to prevent this.

By seeking the views and experiences of these often-overlooked sets of participants and bringing them into dialogue with each other, this research has explored the nuance that exists between the ideals of building design and the practical considerations of end-users. This allowed for answering the overarching research question of how architects and teachers envisage and experience school building design. The general desire of both architects and teachers was for school buildings that were functional, well-maintained and futureproofed, although the specifics of these ideals varied between participants and participant groups. Their experiences and perceptions of school buildings varied in relation to design consultation, notions of risk, and the consideration of pedagogy in the design. While, as noted above, both groups of participants viewed collaborative design and consultation in the design process as important, their experiences of this in practice differed, with teachers often feeling that they had little opportunity to contribute. Architects had a greater sense of risk around project budgets, structural integrity and considerations of environmentally sustainable designs. In contrast, teachers more often saw risks in relation to behaviour and keeping their pupils safe, both from themselves and outsiders. Meanwhile, reflections on the pedagogic impact of buildings came mostly from teachers, representing reflections on their lived experiences of their school buildings. Notably, the fundamental desire of teachers was often for the most basic elements of their school buildings to be designed in a considered way and not produce barriers to them carrying out their jobs. For example, Mia's description of a newly refurbished classroom in her school in which the board was too high for some the younger pupils to reach demonstrated that it had not been designed with the young age-group of the end-user in mind. While many architect participants acknowledged the relationship between school building design and pedagogy, including whole school ethos, atmosphere and more specific teaching strategies, they did not discuss this in detail, perhaps reflecting their concentration on the overall design of buildings rather than the day-to-day lived experiences of the end-users.

Creating a dialogue between the end-users and architects has proven to be particularly pertinent in relation to school buildings, as demonstrated by the often-contrasting views the sets of participants shared, as noted above. However, there was also consensus in some areas, with architects and school staff ultimately highlighting collaborative design and

building functionality as important factors. Although, even in these areas of consensus, there were differences in the experiences of participant groups. While architects noted the consultation they carried out with end-users and stakeholders, teachers felt they had not been consulted or able to participate in the design process of their schools, to the detriment of the end result. The most significant barriers to school buildings being functional and sustainable were identified by participants in both groups as budgetary and regulatory constraints. This is demonstrative of contemporary crises and challenges in relation to the UK's school buildings estate, with the underfunding of school buildings identified as a factor in the state of disrepair of many schools and the significant impact caused by RAAC, as discussed in Chapter 1.1. This points to the significant impact the political landscape has on school buildings, which is unsurprising given the sweeping changes which successive governments have made to school building programmes in the last two decades and the shift in priorities between the various contemporary government school building programmes discussed in Chapter 2.4. This relationship between design and regulation, and the challenges that can arise as a result, has been the subject of sociological research (Imrie and Street, 2011), and this thesis demonstrates the relevance of these architectural constraints to school building design and regulation in the context of a shifting political and pedagogical landscape.

The two groups of participants brought their own expertise and lived experiences to the research. Architects, although often included in research on the technical aspects of the design of school buildings (for example DfES, 2003) their views and experiences are not often sought in this qualitative way. Further, teachers (and other school staff) have little opportunity to share their lived experiences of their school buildings, and many participants in this phase explained in detail how they used and felt about their buildings, showing a depth of understanding which has been missing from much of the existing research in this area. Drawing together the views and experiences of these two groups, I was able to identify the key themes of *Participation*, *Risk* and *Pedagogy*. The political landscape and governance decisions in relation to budgetary constraints and area guidelines (in the form of Building Bulletins) can be seen as a contextualising factor for these three themes. The interviews suggest that the limitations this context places on the ability of architects to produce truly collaborative designs and the ability of teachers and school leaders to maintain and develop their school buildings is profound. This is particularly evident in relation to non-standardised designs; the use and ongoing maintenance of existing school buildings, and therefore, their safety and functionality into the future; and the ability of schools to embed pedagogic principles into their buildings, including principles of accessibility and inclusivity, thereby limiting the extent to which these principles can be fully embraced.

In addition to bringing together the experiences and views of the architects and teachers, the research has also brought together literature from across health and care research with that of education (for example Martin, Nettleton and Buse, 2019; Buse, Martin and Nettleton, 2018; Woolner, 2014). The drawing together of the research in these areas, to provide context and insight into the area of school buildings, contributes a refined understanding of the built environment and how the design of buildings for health and care functions can provide significant insight into that of educational building design. This also related to findings from the interviews which demonstrated the complexity of how school buildings shape behaviour but are also reshaped by teachers, who adapt their spaces to suit their needs. The voices of teachers, as staff in their buildings, provided a view which is often not explored, although has been found to provide valuable understanding of space in research with health and care workers (for example Buse, Martin and Nettleton, 2018). In both areas of research, ideas of risk and vulnerability are negotiated in tension with ideas around connection, creativity and autonomy. While in the design of care homes for older people with dementia, risk is envisaged in terms of ensuring the vulnerable users cannot escape, whereas in school buildings risk is discussed in terms of ensuring outsiders cannot get in. Outdoor spaces are also identified as significant in both care and education spaces, although these spaces are often the aspects of design that are cut due to funding constraints. Comparing how ideas of risk differ among different age groups also contributes to current dialogue between sociologists of ageing and childhood (Wanka et al. (Eds), 2025), and this research extends these discussions to school building design.

Key contributions

The drawing together of the perspectives of teachers and architects provides insights into some of the practical aspects which are important in the design of school buildings, and which, with further research (see section 8.3) could be taken forward as recommendations for effective school building design. In particular, the consensus amongst participants on the importance of consultation and participatory design was strong. Many participants (particularly, although not only, teachers) felt this was not being done enough and that they as teachers had not had the opportunity for consultation in the design of their spaces, but the experience of many architects also raised questions on how this could be done in a cost and time efficient way. While early engagement with stakeholders is in line with RIBA recommendations (RIBA, 2020), architects Ionna and Louise gave strong support for engaging in participatory design as the first step, which goes beyond simply engaging in the early stages as seems more typical. Ionna was able to give a clear example of how

engaging at the earliest point changed the direction of a project significantly (see Figure *5*) and Louise noted that it was much harder to change a design based on feedback after the design had been substantively completed, making consultation after a design had been largely completed a tokenistic act. Parallels can be drawn then between participation in the design process and participation from an educational sense, relating to inclusion, as the key aspects are the inclusion of all (as opposed to gatekeeping, as discussed in Chapter 5.2) and participants having a voice and genuine impact, with their voices being heard and their perspectives understood (Colilles, 2023).

Another specific practical insight, which could be used to support greater levels of participatory design, were the value of using virtual reality (VR). While there is a cost implication to using VR models, as well as a skill requirement from designers, there are ways in which VR could create cost-efficiencies, such as by ensuring that the final building does not contain features which are impractical. For example, the pillars in Liam's school's new science classroom (see Figure 4) or the white boards in Mia's school being too high for many of the pupils to use. Simple features like these would be more easily picked up on as problematic by school staff if they could accurately envisage the space – something which, as Edith pointed out, was hard to do from architectural design drawings which require a more specialised eye to read.

More broadly, the consensus among teachers of needing functional, everyday classroom spaces designed carefully came through strongly in interviews. This can be taken on board by architects, who tended to place more importance on aesthetics and innovation than did teachers. While this is an obvious professional and vocational difference between the two groups, it is important for architects to recognise the basic needs of their clients, and this would be another element that could be addressed more effectively with consultation and participation from school staff and other stakeholders (such as the wider community) at the earliest stages of the design process, to attempt to prevent architects' own perspectives and ideas from becoming the focal point. As indicated by Ionna, architects need to be able put their own perceptions of what would make a good design to one side and take on board the ideas of the end-users and clients, whilst encouraging end-users to think about their options and the possibilities. Ultimately though, as Ionna suggested, sometimes the architect must defer to the end-user even where they are not sure it offers the best outcome, as they will be the ones using the building.

Aside from practical implications for school building design, the methodological approach also adds value to the field, given the use of creative interview methods, particularly the translation of photo-elicitation to the virtual interview environment (Marshall et al., 2023;

Harper, 2002). By using a creative approach to interviewing virtually, which included the opportunity for participants to share images and drawings this opened up conversations that would not otherwise have taken place. This element was not drawn on by many participants – for example, several teachers participated in the interview from their home and the interview was entirely discussion-based with no images used. However, for participants that took up the option of sharing images during the interview, this was clearly valuable and afforded them a way to frame their experiences and explore the spaces in a less inhibited way. In particular, two architects (Louise and Oliver) made use of existing presentations using the screen-sharing feature during their interviews. While the presentations formed the backdrop for their interviews, it allowed for a deep exploration of the buildings and projects they were discussing, including in-depth follow-up questions. This provided rich data from these interviews that went far beyond the basic overview of the visual presentations.

The use of line drawings in the data analysis and thesis also offers a unique approach in sociological research, drawing on both the use of images in architecture and creative practices often adopted in educational research. The line drawings produced by the researcher were particularly successful in offering context and supporting the understanding of the spaces explored by participants, while maintaining anonymity. This extends existing discussions around sketching as a method for data collection, to sketching as a tool for analysis, and it's potential specifically for sociological research on architectural design (Brown et al., 2021). The analytical process in creating the drawings, and considering which spaces to create drawings of required, necessitated a close consideration of what the key aspects of each space were for the participant. It also allowed for the inclusion of some images, which would otherwise not have been possible due to the requirement to maintain anonymity as far as possible – photographs of many of the spaces drawn, for example, would have potentially been identifiable in the context of this research.

Finally, and of importance in the framing of the research as a whole, my position as both an outsider and an insider to the respective participant groups, offered a strong basis for the research to deliver perceptive and thoughtful findings. As explored in Chapter 3.5, my position as an outsider to the field and profession of architecture gave me the ability to approach architects' interviews with a learning mindset. This fitted well with the concept amongst some architect participants that their role in the design process was to educate stakeholders about architecture and what was possible within the design of their buildings. It was also in line with the research approach positioning the architects as experts providing a degree of authoritative knowledge (Kivunja and Kuyini, 2017). In contrast, my position as an insider in the education sector, with my experience in teaching and working in schools, gave me a unique position from which to recruit and interview teachers. Teachers were open and

talked to me freely, in the knowledge that I understood their position and the challenges they faced on a daily basis. In addition, interviews with teachers were not side-tracked by explanations of educational concepts, pedagogies, or teaching tools, allowing for the full length of interviews to focus on delving into teachers' experiences and feelings about their school spaces. This combination of insider–outsider positioning provided a great deal of insight from both participant groups.

7.2 Limitations

As with all research, there are limitations and boundaries that the research must operate within, in terms of the breadth and scale of the research undertaken, as discussed in Chapter 3.7. It must also be noted that the COVID-19 pandemic has had considerable impact on the research outlined here, and as such the methods of data collection vary from those originally intended. While this resulted in additional limitations, including virtual interviewing and lack of direct access to schools, the reconsideration of the research in light of the pandemic also allowed for the novel approach taken here, in the inclusion of architects and teacher participants. The reframing of the research towards adult participants, rather than children, ultimately created space for the creation of a dialogue between architects' and teachers' voices, which produced interesting and valuable insights.

The main limitation of the school-level research, given the COVID-19 pandemic and associated restrictions which were in place for much of the research period, was the omission of children as participants. Originally, I intended to include children as participants, to hear their voices first-hand and allow them to be heard on an equal basis to those of adult stakeholders, which is considered important by educational researchers (Groundwater-Smith, Dockett and Bottrell, 2015; Robinson, 2014; Clark, 2005). However, due to the safety precautions being taken within education institutions (both in primary schools and in higher education research institutions) and the fluctuating situation within the UK during the course of this research, working with children directly was not practically possible. While I maintain that children's voices and agency is highly important, and they are significant stakeholders in their school buildings, the inclusion of the two groups of adult participants has provided a valuable contribution to this area of knowledge. It is important to note that the views gathered, of architects and teachers, provide nuanced and underrepresented perspectives, and so provide high-quality and valuable insights that add to the existing research in this area.

7.3 Implications for future research

This research presents a moment in the history of school buildings in the UK, specifically focussing on the period of school building development from the Blair New Labour governments Building Schools for the Future programme, through to the Conservative government's Priority School Building and School Rebuilding Programmes. This period impacted the UK school buildings estate significantly, reflecting changing ideas of education and pedagogies (Mahony and Hextall, 2013; Byles and Wilson, 2008), drawing from the changing political and cultural landscape, along with the onset of economic austerity and its heavy impact on all public services (Bank of England, 2018; Hodson and Mabbett, 2009). This research has also encapsulated the period of the COVID-19 pandemic and the emergence of RAAC as a danger in some school buildings, and the significant disruption caused to schools by these back-to-back crises. While this research provides significant insight into this period, future research could expand on this by providing a view for the future and an understanding of the ways in which the UK school buildings estate could evolve under Keir Starmer's Labour government.

Further research should include teachers as experts in the needs of their classroom and school settings on a larger scale, which would provide further understanding of their basic needs and ways of delivering on this. In particular, further research could expand on the sample size and breadth, including a wider range and larger number of teachers (for example, from across different subject area specialism, age ranges, and alternative provision). Research could also look in more depth at staff spaces in schools and how the design of these spaces affects their use, and whether this has impacts on emotional labour, staff wellbeing and teacher retention. This could be a particularly valuable avenue given the noted crisis in teacher recruitment and retention rates (Martin, 2024). There is also a strong avenue for further research of this nature with architects, involving them not only in the analysis of the practical design of buildings, but also offering them the chance to voice their experiences and views in depth. Of particular interest for future research could be an ethnographic study exploring a school building project from start to finish, which would provide insights from a variety of stakeholders and could further explore the relationship between these stakeholders and how they collaborate to produce the end result. Future research could also explore the experiences and preferences of children, which was not possible here, to further triangulate the considerations necessary for exemplar school building design. Whilst the imagined ideal schools of children have been explored (Burke

and Grosvenor, 2003; Blishen, 1969), the findings of this research with architects and teachers could serve as a basis to gain more practical and applicable insights from children to gather their input and translate it into tangible design solutions.

Alongside the possibility for the development of future research in these various groups, there is the potential for future research to focus on policy recommendations. While more evidence on a larger scale is needed to make such recommendations, this research indicates that teachers and architects believe greater investment in school infrastructure is required. This is not a new suggestion, however the interviews conducted suggest that budgetary constraints represent a cross-cutting barrier to architects providing and teachers accessing high quality education spaces. There were many suggestions from architects on how to creatively use limited financial resources to provide high quality spaces that met the needs and preferences of schools, and further research in this area could expand on this to provide a detailed overview of ways in which budgets can be used in the most cost-effective and productive ways. In particular, this research indicates that focusing on the flexibility and adaptability of school spaces may be important in providing school spaces that are sustainable and can offer longevity in the face of changing educational pedagogies, student numbers, teaching styles, and political ideologies.

8 Appendices

8.1 Appendix 1 – Interview Topic Guides

Architect Interview Schedule

Pre-Interview		
Introductions	Brief project background Brief personal background	
Consent	Read Participant Information Sheet and sign Consent Form	
Interview		
	Start recording	
General practise	Professional background/experience Range of projects/sectors Education projects	**RIBA Plan of Work:** Strategic Definition Prep & Briefing (B) Concept Design (C) Spatial Coord (S) Technical Design (T) Manufacturing & Construction (M) Handover (H) Use (U)
Specific projects	Length/scale (B) Partners – e.g. Councils, Private Schools, Businesses Practical considerations – (B/S/T) cost; site; regulations Stakeholder involvement – (B/H/U) community; staff; children Design – (B/C/S/T) formats; steps; changes Outcomes – (M/H/U) completion; alterations; POE	
Opinions	Personal preferences – architectural influences Own school buildings Policy trends – BSF; PSBP	
Finishing up		
Anything else	Not mentioned General comments Questions	
	Stop recording	

School Interview Schedule

Pre-Interview	
Introductions	Brief project background Brief personal background
Consent	Read Participant Information Sheet and sign Consent Form

Interview	
	Start recording
General info	Experience – length of service, variety of schools Subject – "Does your subject require any particular spatial or design features? If so, how does the quality of this affect your ability to teach?" e.g. science classrooms Types of schools – size age, plan Current school
Specific spaces	Classroom layout – flexibility, furniture Outdoor spaces – size, accessibility, use Communal areas/entrance – 'heart of school' Staff areas – outlook, use, accessibility (to pupils) Community use – public, parents, out of hours Building work – additions, refurbs, consultation
Opinions	Pedagogy – "Do you have a particular pedagogy and how does the building help or hinder that?" Class sizes

Finishing up	
Anything else	Not mentioned General comments Questions
	Stop recording

8.2 Appendix 2 – Participant Information Sheets

Participant Information Sheet for Architects

Background

My name is Anastasia Shaw and I am a White Rose Doctoral Training Partnership funded researcher at the University of York. I would like to invite you to take part in the following research project entitled *Contemporary school architecture: Exploring stakeholder perspectives of how school buildings affect pupil engagement with learning in Britain?*

If you think you would like to participate, please read the following information sheet carefully and let me now if anything is unclear or you would like further information.

What is the purpose of the study?

I will be looking at why spaces have been designed in certain ways and the intention behind these designs. I will be seeking perspectives on how the design of school spaces affects how the spaces are used and the affect the designs have on pupils and their learning experience.

Why have I been invited to take part?

You have been invited to take part because you have relevant experience working in the field of architecture and your insight will help me to better understand how and why buildings are designed in certain ways and the practical implications of school building design.

Do I have to take part?

No, participation is optional. If you do decide you want to take part, you will be given a copy of this information sheet for your records and will be asked to complete a participant information form.

If you choose to take part, you will be invited to a one to one interview with myself (either in person or via video link depending on your preference and Covid-19 considerations). During the interview, we will explore your opinions and experiences of school design.

If you change your mind before April 2022, you will be able to withdraw your participation.

On what basis will you process my data?

Under the General Data Protection Regulation (GDPR), the University of York has to identify a legal basis for processing personal data and, where appropriate, an additional condition for processing special category data.

In line with the University of York's charter which states that we advance learning and knowledge by teaching and research, the University processes personal data for research purposes under Article 6 (1) (e) of the GDPR:

Processing is necessary for the performance of a task carried out in the public interest

Contemporary school architecture: Exploring stakeholder perspectives of how school buildings affect pupil engagement with learning in Britain? Version 3 05/11/2020

Special category data is processed under Article 9 (2) (j):

Processing is necessary for archiving purposes in the public interest, or scientific and historical research purposes or statistical purposes

Research will only be undertaken where ethical approval has been obtained, where there is a clear public interest and where appropriate safeguards have been put in place to protect data.

In line with ethical expectations and in order to comply with common law duty of confidentiality, we will seek your consent to participate where appropriate. This consent will not, however, be our legal basis for processing your data under the GDPR.

How will you use my data?

I will use audio recordings and transcriptions of your interview to explore the topics we discuss and provide answers to my research questions. I may use quotes from your interview in my final thesis to demonstrate my conclusions, but these will be anonymised so you will not be identifiable.

Will you share my data with 3rd parties?

Anonymised data will be deposited with the UK data archive, which can be found at https://www.data-archive.ac.uk/, in line with my funder recommendations and may be reused from this archive for secondary research purposes.

How will you keep my data secure?

The University will put in place appropriate technical and organisational measures to protect your personal data. For the purposes of this project I will ensure your data is stored on a fingerprint secured and encrypted device and a backup stored on the University of York's cloud storage which complies with data protection requirements.

Information will be treated confidentiality and shared on a need-to-know basis only. The University is committed to the principle of data protection by design and default and will

collect the minimum amount of data necessary for the project. In addition, we will anonymise or pseudonymise data wherever possible.

Will you transfer my data internationally?

The University's cloud storage solution is provided by Google which means that data can be located at any of Google's globally spread data centres. The University has data protection compliant arrangements in place with this provider. For further information see https://www.york.ac.uk/it-services/google/policy/privacy/.

Will I be identified in any research outputs?

No. You will remain anonymous and any of your comments that are used in the final research output will not contain identifying information about you or your place of work.

Contemporary school architecture: Exploring stakeholder perspectives of how school buildings affect pupil engagement with learning in Britain? Version 3 05/11/2020

How long will you keep my data?

Data will be retained in line with legal requirements or where there is a business need. Retention timeframes will be determined in line with the University's Records Retention Schedule.

Personal data collected (e.g. names, contact details) will be retained for the minimum necessary length of time to facilitate arranging interviews and disseminating results.

What rights do I have in relation to my data?

Under the GDPR, you have a general right of access to your data, a right to rectification, erasure, restriction, objection or portability. You also have a right to withdrawal. Please note, not all rights apply where data is processed purely for research purposes. For further information see https://www.york.ac.uk/records-management/generaldataprotectionregulation/individualsrights/.

Questions or concerns

If you have any questions about this participant information sheet or concerns about how your data is being processed, please contact my PhD supervisor, Daryl Martin (daryl.martin@york.ac.uk), in the first instance. If you are still dissatisfied, please contact the University's Acting Data Protection Officer at dataprotection@york.ac.uk or the Economics, Law, Management, Politics and Sociology Ethics Committee (ELMPS) at elmps-ethics-group@york.ac.uk.

Right to complain

If you are unhappy with the way in which the University has handled your personal data, you have a right to complain to the Information Commissioner's Office. For information on reporting a concern to the Information Commissioner's Office, see www.ico.org.uk/concerns.

Participant Information Sheet for School Staff

Background

My name is Anastasia Shaw and I am a White Rose Doctoral Training Partnership funded researcher at the University of York. I would like to invite you to take part in the following research project entitled *Contemporary school architecture: Exploring stakeholder perspectives of how school buildings affect pupil engagement with learning in Britain?* If you think you would like to participate, please read the following information sheet carefully and let me now if anything is unclear or you would like further information.

What is the purpose of the study?

I will be looking at why spaces have been designed in certain ways and the intention behind these designs. I will be seeking perspectives on how the design of school spaces affects how the spaces are used and the affect the designs have on school staff and pupils.

Why have I been invited to take part?

You have been invited to take part because you have relevant experience working with school children in Britain and your insight will help me to better understand how school buildings are used and how the design of these spaces affects those who use them.

Do I have to take part?

No, participation is optional. If you do decide you want to take part, you will be given a copy of this information sheet for your records and will be asked to complete a participant information form. If you choose to take part, you will be invited to a one to one interview with myself (either in person or via video link depending on your preference and Covid-19 considerations). During the interview, we will explore your opinions and experiences of the design of school spaces and the use of the spaces by pupils. If you change your mind before January 2023, you will be able to withdraw your participation.

On what basis will you process my data?

Under the General Data Protection Regulation (GDPR), the University of York has to identify a legal basis for processing personal data and, where appropriate, an additional condition for processing special category data. In line with the University of York's charter which states that we advance learning and knowledge by teaching and research, the University processes personal data for research purposes under Article 6 (1) (e) of the GDPR: *Processing is necessary for the performance of a task carried out in the public interest*

Contemporary school architecture: Exploring stakeholder perspectives of how school buildings affect pupil engagement with learning in Britain? Version 4 01/11/2022

Special category data is processed under Article 9 (2) (j):

Processing is necessary for archiving purposes in the public interest, or scientific and historical research purposes or statistical purposes

Research will only be undertaken where ethical approval has been obtained, where there is a clear public interest and where appropriate safeguards have been put in place to protect data.

In line with ethical expectations and in order to comply with common law duty of confidentiality, we will seek your consent to participate where appropriate. This consent will not, however, be our legal basis for processing your data under the GDPR.

How will you use my data?

I will use audio recordings and transcriptions of your interview to explore the topics we discuss and provide answers to my research questions. I may use quotes from your interview in my final thesis to demonstrate my conclusions, but these will be anonymised so you will not be identifiable.

Will you share my data with 3rd parties?

Anonymised data will be deposited with the UK data archive, which can be found at https://www.data-archive.ac.uk/, in line with my funder recommendations and may be reused from this archive for secondary research purposes.

How will you keep my data secure?

The University will put in place appropriate technical and organisational measures to protect your personal data. For the purposes of this project I will ensure your data is stored on a fingerprint secured and encrypted device and a backup stored on the University of York's cloud storage which complies with data protection requirements.

Information will be treated confidentiality and shared on a need-to-know basis only. The University is committed to the principle of data protection by design and default and will collect the minimum amount of data necessary for the project. In addition, we will anonymise or pseudonymise data wherever possible.

Will you transfer my data internationally?

The University's cloud storage solution is provided by Google which means that data can be located at any of Google's globally spread data centres. The University has data protection compliant arrangements in place with this provider. For further information see https://www.york.ac.uk/it-services/google/policy/privacy/.

Will I be identified in any research outputs?

No. You will remain anonymous and any of your comments that are used in the final research output will not contain identifying information about you or your school.

Contemporary school architecture: Exploring stakeholder perspectives of how school buildings affect pupil engagement with learning in Britain? Version 4 01/11/2022

How long will you keep my data?

Data will be retained in line with legal requirements or where there is a business need. Retention timeframes will be determined in line with the University's Records Retention Schedule.

Personal data collected (e.g. names, contact details) will be retained for the minimum necessary length of time to facilitate arranging interviews and disseminating results

What rights do I have in relation to my data?

Under the GDPR, you have a general right of access to your data, a right to rectification, erasure, restriction, objection or portability. You also have a right to withdrawal. Please note, not all rights apply where data is processed purely for research purposes. For further information see https://www.york.ac.uk/records-management/generaldataprotectionregulation/individualsrights/.

Questions or concerns

If you have any questions about this participant information sheet or concerns about how your data is being processed, please contact my PhD supervisor, Daryl Martin (daryl.martin@york.ac.uk), in the first instance. If you are still dissatisfied, please contact the University's Acting Data Protection Officer at dataprotection@york.ac.uk or the Economics, Law, Management, Politics and Sociology Ethics Committee (ELMPS) at elmps-ethics-group@york.ac.uk.

Right to complain

If you are unhappy with the way in which the University has handled your personal data, you have a right to complain to the Information Commissioner's Office. For information on reporting a concern to the Information Commissioner's Office, see www.ico.org.uk/concerns.

8.3 Appendix 3 – Consent Form Template

Participant Consent Form

Lead researcher: Anastasia Shaw

This form is for you to state whether or not you agree to take part in the study. Please read and answer every question. If there is anything you do not understand, or if you want more information, please ask the researcher.

Have you read and understood the information sheet about the study?	Yes ☐ No ☐
Have you had an opportunity to ask questions about the study?	Yes ☐ No ☐
Do you understand that the information you provide will be held in confidence by the researcher?	Yes ☐ No ☐
Do you understand that you may withdraw from the study at any time and for any reason before 1st January 2023?	Yes ☐ No ☐
Do you understand that the information you provide may be held in a data archive and used in future research?	Yes ☐ No ☐
Do you agree to take part in the study?	Yes ☐ No ☐
Do you agree for your interview to be audio recorded?	Yes ☐ No ☐
Do you agree for your anonymised data to be archived with the UK Data Service?	Yes ☐ No ☐

All data is held by The University of York in accordance with the Data Protection Act.

Your name (in BLOCK letters):

Your signature:

If you would like to receive a summary document upon completion of the research, please provide your preferred email address or postal address below:
(Your contact details will not be shared or used for any other purpose.)

Email/postal address:

Interviewer's name: Date:

9 Glossary

Acronym	Meaning	Description
ADHD	Attention Deficit Hyperactivity Disorder	A neurodevelopmental disorder (or type of neurodivergence) affecting executive function, concentration, emotional regulation and other behaviour
BB	Building bulletins	UK government area guidelines for publicly funded schools and educational settings
BSF	Building Schools for the Future	UK government funding scheme for school buildings announced in 2004, cancelled in 2010 with school delivered until 2012
CDC	Condition Data Collection	UK government programmes (occurring in multiple rounds) for collecting data on the condition of school buildings
CIF	Condition Improvement Fund	UK government funding scheme for schools, used mostly for building condition improvement
DCSF	Department for Children, Schools and Families	UK government department responsible for children's services and education between 2007 and 2010
DfE	Department for Education	UK government department responsible for children's services and education from 2010 to present
DfES	Department for Education and Skills	UK government department responsible for children's services and education between 2001 and 2007
EAL	English as an additional language	A way of referring to pupils who speak English as an additional language, where English is not their first or main spoken language
EU	European Union	Political and economic union of 27 member states
EYFS	Early Years Foundation Stage	Statutory framework for early education in England, applicable to children from birth to age 5
FE	Further Education	Post-16 education in the UK, including study towards A-levels and advanced apprenticeships
HE	Higher Education	Post-18 education in the UK, including study towards Undergraduate degrees and degree apprenticeships
ICT	Information and Communications Technology	School subject covering computing, telecommunications and related topics
LA	Local Authority	Local governments in England responsible for services including

		education, transport and waste collections
MUGA	Multi Use Games Area	An artificial grass sports area designed for multi-use, including for sports such as Tennis, Football, Basketball and Netball.

Acronym	Meaning	Description
NAO	National Audit Office	Independent spending watchdog in the UK, reporting on the financial accounts of UK government departments and public bodies
OECD	Organisation for Economic Co-Operation and Development	International organisation that carries out research and propose policy ideas in relation to social, economic and environmental challenges
Ofqual	The Office of Qualifications and Examinations Regulation	National regulator for qualifications, examinations and assessments in Englan
POE	Post-occupancy evaluation	The process of evaluating the performance of a new building after it has been handed over to the end-users
PP	Pupil Premium	A type of UK government funding for schools, providing additional funding for pupils who meet certain criteria, including having English as an additional language, having a low household income, having been eligible for free school meals, and looked-after or care-experienced children
PRU	Pupil referral unit	A specialist educational setting for children who cannot attend mainstream schooling for reasons such as significant behavioural issues, illness, or neurodivergence

PSBP	Priority School Building Programme	UK government funding scheme for school buildings announced in 2011, closed in 2021 with some schools still in progress as of 2024
RAAC	Reinforced Autoclaved Aerated Concrete	A type of lightweight concrete used in construction in the UK between the 1950s and the 1990s
RIBA	Royal Institute of British Architects	Professional body for architects in the United Kingdom
SEMH	Social, emotional and mental health	Term used in reference to people (specifically pupils in the UK education system) who have additional needs relating to social, emotional and/or mental health difficulties
SEND	Special Educational Needs and Disabilities	Term used to describe pupils in the UK education system who have additional needs, including but not limited to physical disability, cognitive impairment, and neurodevelopmental disorders
SLT	Senior Leadership Team	Senior staff within a school - usually comprising Headteacher, Deputy Head(s), Assistant Head(s), Heads of Department and Heads of Year or Key Stage
SRP	School Rebuilding Programme	UK government funding scheme for school buildings announced in 2020, ongoing
SST	Sustained Shared Thinking	Educational theory that encourages children to think critically and problem solve as part of their learning

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