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SCHOOL BUILDING GUIDANCE

For head teachers,school building commissioners, teachers and the wider school community

Designing for practice: Pedagogic implications of creating new schools

Credit: HKS

By Hau Ming Tse, Harry Daniels, Jill Porter, Ian Thompson and Sarah Cox

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University of Oxford, Department of Education,
July, 2018

Plymouth School of Creative Arts
Credit: Hufton Crown

Foreword

Standing in the space of uncertainty can be both unnerving and exciting. Sometimes simultaneously! Being able to create a new school building is one of those moments. You are not alone in this endeavour as a new school head teacher or commissioner, but you rightly feel the accountability. There will be staff, governors, architects, consultants, students and parents all wanting to join in and requiring leadership. All probably have a different picture of success in mind. For some, success is merely the rectification of a current problem- the completion and occupation of a new school building. However, the bridge between architect and educator cannot merely be enthusiasm. There are greater pedagogical opportunities and purposes that must be held on to.

This report will help those involved in new school building to understand opportunities and maximise possibilities in order to journey towards successful occupation. Without awareness it is impossible to take responsibility. The report draws from the experience of others to support awareness of what might be and to see the familiar world of the school building through new eyes. It should be read by all who are building, refurbishing or occupying a new school.

Dave Strudwick

Founding Headteacher,
Plymouth School of Creative Arts

Executive summary

There has been a rapid growth in the number of new free schools with almost 400 opening since 2011 and a further 300 projects approved, This creates a unique set of challenges as Headteachers and staff are required to learn a new set of skills relating to the design and build of educational spaces.

This co-designed guidance builds on “Design Matters?” an AHRC funded study of the impact of design on students, teachers and parents engagement in newly built schools. This post-occupancy evaluation illustrated the mutual shaping between design and practice which has significant consequences for the occupiers of the building. The guidance has been developed collaboratively, working with schools to leverage the lessons learned by them while undergoing the build process and by testing out the utility of these key points with schools who are at different stages of this process.

We illustrate these lessons with reference to our 6 partner schools, who have their own particular stories to tell. These include a school building that is Grade I listed; a special school with a change in cohort; an all age school, a specialist school for creative arts; one of the first Free schools to open and a specialist music school.

The guidance provides an overview of the process and illustrates some of the issues that can arise at each stage.

In summary, our 10 key questions are as follows:

1.
What type of school do you want to create? What type(s) of learning will take place? How will you develop your educational vision in collaboration with staff, pupils and governors?

2.
How do you share your vision with architects, engineers and contractors?

3.
Using that vision how do you identify clear priorities in the design and construction process?

4.
How can the school reflect on the future and the place of flexibility and adaptability for the long term?

5.
How is movement, flow and transitions of people and the impact of noise, lighting and ventilation considered in the design

6.
How can the school learn to attend to the details of the design- both inside and outside of the building, in particular aspects that will have a direct impact on pedagogic practice?

7.
How can the school be proactive in accessing information and support during the vision, design and construction process?

8.
How can the school understand the governance, procurement and stakeholder processes?

9.
How can the school keep a strategic overview of the cost and the implications of design decisions on teaching and learning?

10.
How can the school prepare for learning how to use the new building?

Content

Credit: HKS

01. Introduction

Policy on the role of design in rebuilding schools' estate in England is at a crossroads as attempts are made to achieve good value and efficiency in times of austerity. The current government has recognised the urgent need for more schools and has instigated the Free School Programme (FSP) (currently involving more than 600 schools) alongside the £4.4 billion Priority School Building Programme (PSBP) of rebuilding and refurbishing school buildings in the worst condition. The importance of good school design is well documented in academic literature. Reported impacts of school design on practice include, but are not limited to teacher pedagogy, student engagement, student academic achievement, student attendance, school climate, and healthy eating-related behaviours (e.g. Frerichs et al, 2015; Imms and Byers, 2016; Ariani and Mirdad, 2016; Barrett et al, 2017)

However, school design-and-build is a complex multi-agency process where issues of continuity and conflict can arise (Tse, Stables and Daniels, 2015). According to a recent national telephone and email survey of all schools built under the Building Schools for the Future (BSF) programme, 62.39% of the participating schools reported that they had made modifications to the building since occupation (REF). Discussions with professional associations (Design Council, RIBA) and head teachers of recent building projects also highlighted that there is very limited up-to-date guidance available to those who work from a pedagogic perspective (e.g. head teachers, managers in schools) on new school building projects.

In response to these challenges we established a multi-professional team which includes an architect (Tse), a social scientist (Daniels), an educationalist (Thompson), and a disability specialist (Porter) to work collaboratively with New Schools Network (NSN), school stakeholder representatives, European Schoolnet, Architects Feilden Clegg Bradley Studios, the Royal Institute of British Architects (RIBA) on the co-design of this school building guidance which we hope will be of practical use for headteachers, school building commissioners, teachers and the wider school community as they become involved in the processes of school design and build. The focus of this guidance is on the pedagogic implications of creating new schools.

Our research team interviewed key stakeholders in schools that are newly built and schools that are currently undergoing the design process. Two workshops were held with those schools to discuss the potential knowledge gained from their recent experience of school building.

Extensive consultations were undertaken:

- workshops were held with our established external industry partners (architects, engineers, contractors) and school stakeholder representatives to further co-design and publish summative guidance on the basis of user experience of the draft guidance;
- social media such as LinkedIn, Twitter and Facebook were used to generate online engagement with a broad range of end users and practitioners (headteachers, teachers and students, architects, engineers, building contractors and school building commissioners).

We are very grateful to all those who supported the development of the guidance which is designed to show:

- how to develop a school's pedagogical vision;
- how to translate these ideas into new school buildings within the funding limit;
- how the new school buildings in turn mediate pedagogical practices.

Overall we believe that design is a social practice which, if it is to be effective, must be carefully adjusted to meet the needs of end users, e.g. teachers and students, including those with additional needs, whether in mainstream schools or special schools.

02. About This Guidance

The aim of this Guidance is to share practical knowledge on school building design and construction process with those who involved in creating new school buildings, school refurbishment and conversion projects. The Guidance applies to mainstream primary and secondary schools, as well as special schools.

Credit: Tim Crocker

This Guidance may be of interest to:

- Headteachers
- School teachers
- School business managers
- School building commissioners
- The wider school community

The Guidance is organised into five sections, plus appendices (acknowledgement and glossary). It has been co-designed by practitioners and the Design Matters? research team.

The section 'Key Phases' is an overview and explanation of three phases that are closely related to the pedagogical implication of school buildings, namely 'development of educational vision', 'design and construction', and 'occupation'. Those three phases are identified by stakeholders in this co-design project and form the structure of all the case studies presented in this Guidance.

The section 'Case Studies' is where we use 12 school building projects (6 finished schools and 6 schools currently undergoing the design process) as examples to illustrate how the three key phases work in practice, including the issues that might arise during each phase, and good practices to address them.

The section 'Process' is supported by our discussions with school, industry, New Schools Network (NSN) and Education and Skills Funding Agency (ESFA) partners. This section outlines the process from application to post occupation of school buildings. Each stage, with its key tasks, key questions, key stakeholders and time scale is explained in detail.

The section '10 Lessons Learnt' is a summary of key lessons learnt from our discussions with school, industry, NSN and ESFA partners.

The section 'Additional Resources' includes government documents, articles and videos that we think might be useful for future school building projects. The resources are organised into the following sections: (1) school building guidance and statutory requirements, (2) school design process and (3) school design, POE and wider benefits. Each resource comes with a short description.

In response to our partner schools' proposal of an 'interactive, user-friendly and accessible' guidance, hyperlinks are embedded in the digital version of this Guidance, allowing users to quickly access desired sections of this guidance, and external websites and videos.

Credit: FCB

03. Key Phases

Stakeholders in this co-design project have identified 3 key stages in the school design and building process and the lessons learnt from their experiences.

Development of Educational Vision

Design and Construction

Occupation

Credit: HKS

Phase 1
Development of Educational Vision

The process of building a new school begins with a clear educational vision which will be the foundation of the whole process. At this stage the school community has a most important role in clearly identifying and articulating their requirements.

The vision begins with the understanding of the local context and the wider school community in which the students live. This helps to identify the specific requirements of the students, and create the educational vision that meets those specific needs. This stage is also important for thinking ahead about how the community may change and make sure the design is flexible enough to adapt to future requirements.

Case Study Link:
Daventry Hill School

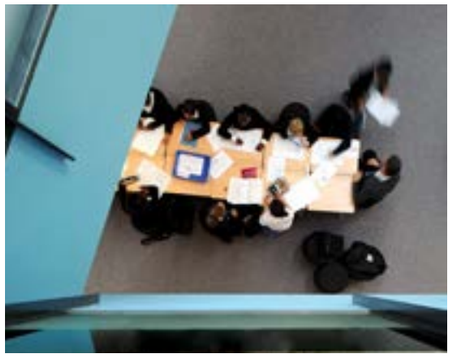
Case Study Link:
Hackney New School

If a school is designing for a specialism which will differentiate it from other schools in the locality the educational vision will need to be developed to fully understand the specific requirements of that specialism in the chosen local context.

'I`m a believer that all schools should have a focus on something, a speciality, which is their real strength and then think about how the new building should accommodate that.'
(Executive Head, case study school)

The development of the educational vision for specialisms should fully engage relevant school staff or consult specialist staff in exemplar schools with similar specialisms from the very beginning. Schools who have been through the process emphasised the importance of learning from the experience of educationalists as well as from past projects:

'You will not be able to hire all your specialised teachers during the planning phase. But you should go out and talk to other specialised teachers in that process. Because we made assumptions about how music rooms work, the flows of the day, the timetable, the storage of music instruments, which are all quite wrong. We modelled them with the architects, but the architects have never run a music school. So go visit as many settings which are specific to your specialism as you possibly can.'
(Governor, case study school)



Credit: HKS

Ensuring that education is the primary focus of the design process and that the outcome will support the teaching and learning as envisioned for the life of the building may sound like an obvious imperative. However, a lack of this focus has resulted in the creation of dysfunctional schhols

It is important that the educational vision should not be based on the views of one commissioner, or indeed one headteacher. Key stakeholders should be consulted to ensure that the school design will serve the community for the life of the building and be sufficiently flexible and adaptable to allow for changes in priorities .

Credit: HKS

Credit: HKS

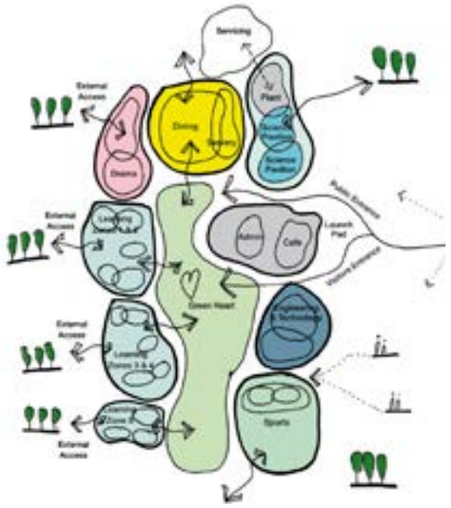
A clear educational vision that is defined by the school community; that reflects the needs of the students, the teachers and key stakeholders; and one that is based on evidence and lessons learnt from the experiences of others will support the effective development of the design and construction stages.

Phase 2
Design and Construction

The design and construction stage is where the educational vision of the school is translated into the reality of school buildings. During this stage it is important to refer to your clearly stated, educational vision from stage one in order to ensure that the building will be fit for the purposes of the occupiers.

Case Study Link:
Bristol Cathedral Primary School

Our case studies have demonstrated how school buildings function after occupation depends on the effectiveness of communication and cooperation among multiple agencies during the design and construction stage, including but not limited to your school community, architects, engineers, project managers, contractors, ESFA and LA.



Credit: HKS

Timely inputs from key staff members with different expertise will be crucial throughout the design process. Consultation with professionals and careful reference to existing school building guidance has also been identified as helpful by our sample schools. Students can also be involved and this can help to promote students' sense of belonging after occupation.

Colleagues in our sample of schools commented on flexibility/adaptability of the design at this stage as well as at the Vision stage. This is especially crucial for special schools where cohorts can change significantly:

'I think it's about ensuring the flexibility in the design. To meet the needs of a range of young people in a special school rather than be very specific'.

(Headteacher, case study special school)

Another key aspect is identifying key educational priorities within the budget. Setting a strategic overview of the cost plan after securing funding can help you to balance your school's needs within a tight budget, and reduce post-occupancy tensions and dilemmas:

Credit: Bristol Cathedral Priamry (to be confirmed)

'The underlying problem is, the pot of money isn't infinite…. for me it's crucial to understand our key priorities to be able to deliver our educational vision. We have a soft playroom to play in but not the resources for it. Also a sensory room with nothing in it, that alone cost £25,000 to kit out.'

(Headteacher, case study special school)

It is also advisable to maintain a client role and keep appropriate scrutiny of the design. This can be achieved by working closely with different agencies, paying close attention to detail when signing a contract, and keeping a robust record of all the change decisions made. Be aware that every detail should be carefully considered at the early design phase (e.g. lighting, fire doors, plug sockets, timetable, logistics etc.). Any design or specification changes will have a significant impact on the budget or the delivery date once the project has reached financial close and signed off. Identifying key educational priorities will also help the school with decision making during any value engineering process in which costs must be cut. During the construction stage, our sample schools have also stated the importance of appropriate input and scrutiny from the ESFA..

Case Study Link:
West London Free School

Resources Link:
BB103, area guideline for mainstream schools
BB104, area guideline for SEND
BB101, ventilation, thermal comfort and indoor air quality in schools
BB93, acoustic design
BB90, lighting design

Phase 3
Occupation

Resources Link:
School Design, POE and wider benefits

Case Study Link:
Plymouth School of Creative Arts

The handover and occupation phase requires careful preparation on the part of the school. It is a key stage in the effective occupation of new school buildings. It is important for the wide range of different user groups in schools to learn of how to use the building for their purposes and be able to understand and optimise the potential the new building offers for teaching and learning. It takes time for the users of a school to settle in and understand how the school buildings and services should operate. Our sample schools all referred to the strong positive impact of school design has had on their educational practice, school culture and student behaviour, and this impact is also well documented in literature.

'The new building provides a chance for the children to interact in different ways, if the children are coming up the stairs and along the corridor, there's enough space for them to be able to stop and have a chat…and they're not being pressured to move along because there are people bustling past, they've got space to enjoy their school and enjoy the people around them'

(Case study school)

Case Study Link:
Marine Academy Primary School

Credit: HKS

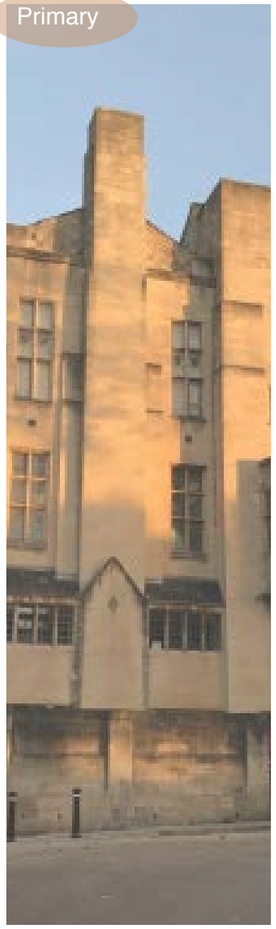
Credit: HKS

Our sample schools have also identified 'teething' issues with their new buildings and the processes required to rectify, modify and adapt during the post occupation phase.

The occupation stage can be frustrating when issues from previous stages are unresolved and when changes need to be made retrospectively. For example, poor specification and build quality, ventilation and acoustic problems may all result. To some extent, many of issues identified by our sample schools can be addressed by a rigorous commissioning process, deeper engagement and collaboration between the designers, the facilities team and sufficient training for the day to day management of the school.

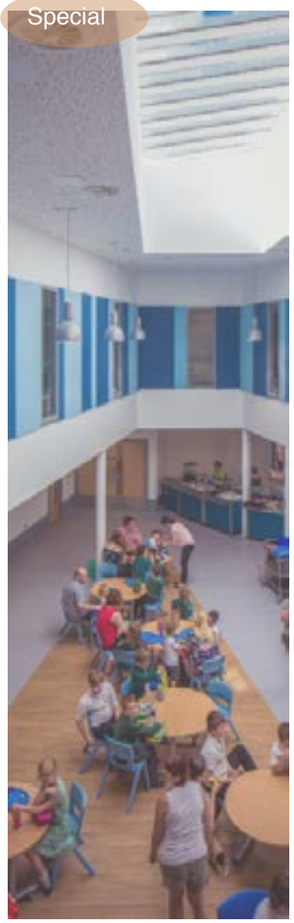
Credit (from left to right): *CODA Architects/Aukett Swanke, HSA, unknown, Stride Treglown, Hufton Crow, Unknown, HKS*

04. Case Studies



Primary

Cathedral Primary School



Special

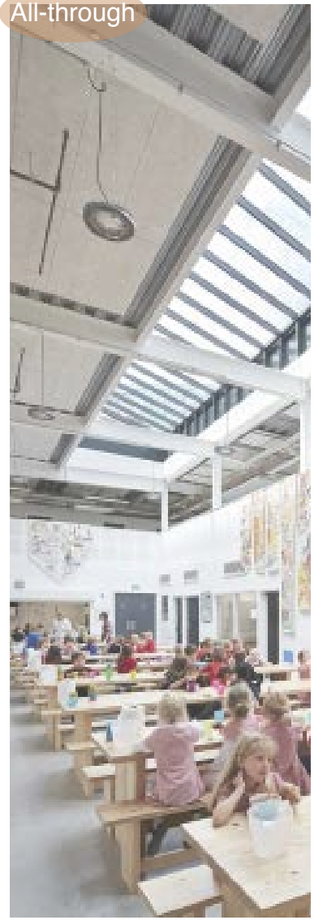
Daventry Hill School

Secondary

Hackney New School

Primary

Marine Academy Primary



All-through

Plymouth School of Creatice Arts

Secondary

West London Free School

Workshop 2 schools

Cathedral Primary School

School Type	4-11 music specialist school
Project Type	Renovation
Size	240 pupils in 2017/18 with a capacity of 420 when full
Students	10% EAL, 35% minority ethnic
Location	Central Bristol, two lower floors at the Central Library.

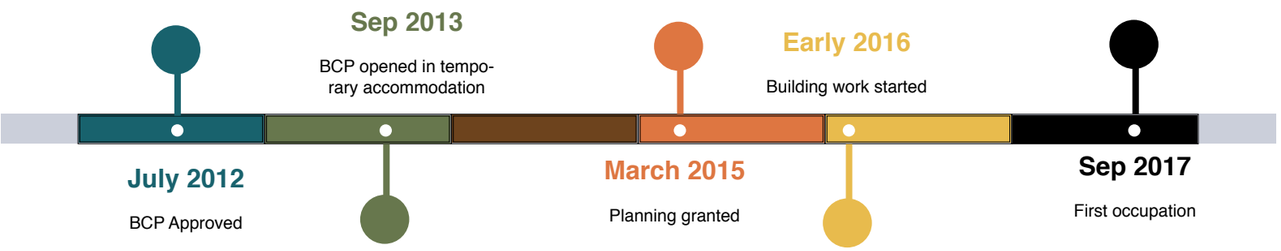
The School

Cathedral Primary School (CPS) is a 4-11 music specialist school in the heart of Bristol. 10% of the students at CPS speak English as an additional language and 35% come from black and minority ethnic backgrounds. The proportion of students eligible for the pupil premium is just below the national average.

The Project

The school originally opened in 2013 and was located at Abbey House on the campus of Bristol Cathedral Choir School. After a 2-year renovation project, the school moved to the two lower floors beneath the Central Library in 2017. The 1906 library, designed by architect Charles Holden, is a Grade I listed building. The renovation included the building of 14 classrooms, a multi-purpose hall and offices on the two floors. The main focus of the project was enabling more natural light entering the building, by exposure of the original overhead ground floor glass block floor that now provides natural light into the core of the school.

Project Timeline



Credit: CODA Architects/Aukett Swanke

Lessons Learnt from The Project

1. Development of Educational Vision

Although CPS was an existing school before they moved to the new building, the project required them to redefine their education vision prior to the renovation process. They outlined three principles that guided them throughout the project.

Firstly, **the recognition and understanding of the surrounding community and a school ethos that matches with its needs.** The location of Cathedral Primary School within the heart of Bristol with its access to cultural and historic attractions provides rich learning opportunities outside the school environment. The careful planning of the curriculum includes use of these experiences to enrich learning opportunities. The children enjoy visiting the cathedral to listen to the choristers sing and will eventually, as the school grows, use it as an assembly space.

Secondly, **a music specialism, which helps the school to stand out from other mainstream institutions.** Music has had a long tradition in the Trust.

Thirdly, **a set of educational principles** that the school community agreed on and which were of primary importance throughout the 'messy process of design and construction'. For CPS, these developed into design principles to increase natural light entering the building; maximisation of the use of space; and the use of design as a tool to support teaching practice.

Credit: CODA Architects/Aukett Swanke

Having been through the process, the school staff outlined what can help in the integration of educational vision and principles in the design. It is important where appropriate to **be involved in all stages of the process** in order to gain a better understanding of the challenges faced by both the contractors and project managers, which improves communication and cooperation when decisions need to be made. **Making the educational vision visible as early as possible** can help to gain support for the project from the local community. CPS commissioned a local architect to create pre-design drawings of the school. **Taking leadership changes into consideration** is also essential for ensuring the durability of the design over time:

> *'I still see schools, where a Head has had a vision and it`s been critical to the design process. When that Head leaves nobody can make the design work. Sometimes the design is too specif ic to the vision of one Head. There are two parts to that. One is, listen to the educationalists, and two is base it on evidence.'*
>
> (Executive Head)

Credit: CODA Architects/Aukett Swanke

2. Design and Construction

It is of utmost importance to **examine the contract thoroughly** and **carefully scrutinise the design** in order to avoid misunderstandings and incidents that cannot be amended at later stages.

> *'The access control is the perfect example. In the project meetings we said that we need access control to be compatible with exist ing access controls, and they are not. And when we complained that they weren`t, they said, `well, you signed the contract`. Where is the recourse there? Who should`ve spotted that? I should`ve made sure when signing the contract, our project manager should`ve spotted that. Everyone who was around that table should`ve spotted that, but no one did. But those are the lessons you learn.'*
>
> (Executive Head)

Students were part of the design and construction process, which helped them to understand the process and feel positive about the new building.

> *"The students have been part of the whole pro cess. So they feel positive about it, because they`ve been part of the waiting process for it. And they`ve seen the people working on it, they walked by it for the past 2 years and seen how it`s been redesigned, they felt like an important part of the process. We purposely involved them in that process."*
>
> (Primary Head)

The students already felt a part of this environment and were confident within this space. After the school relocated to the Central Library in 2017, the students from Cathedral Primary had lessons about Charles Holden, the architect who designed the Central Library. They felt proud to be part of an educational setting benefitting from the inspiration of Holden's design.

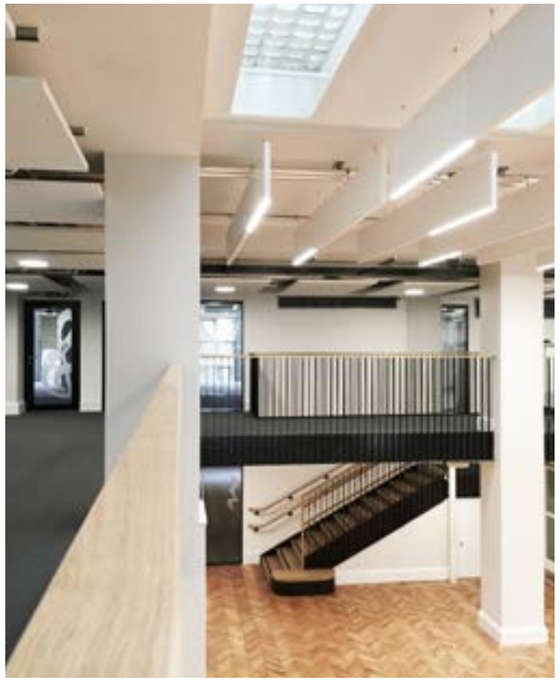
Credit: CODA Architects/Aukett Swanke

Credit: CODA Architects/Aukett Swanke

3. Occupation

The end of the construction work does not mean the end of the process. **Learning how to use the building** and evolving the design is important. Since opening, **students have been constantly involved** in making the school environment more creative and a space they belong in.

> *'I think what is lovely that it is still evolving, it is not how I want it yet at all. It is ready to open and function but it is not how we want it yet. We still need to make it look more creative. It is nice that children are part of the process to evolve it even further'.*
>
> (Primary Head)



Credit: CODA Architects/Aukett Swanke

Credit: HSA

Daventry Hill School

School Type	4-18 SEN school
Project Type	New Build
Size	Full capacity of 175 children (School to update)
Students	24.4% eligible for free school meals (REF)
Location	

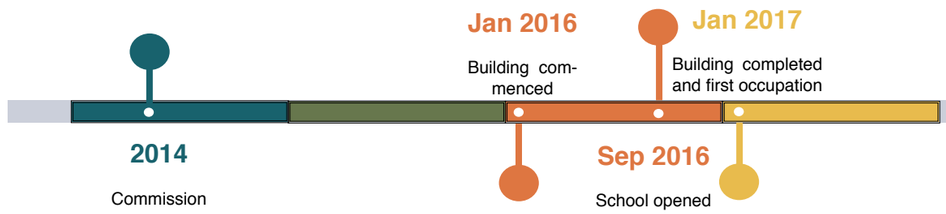
The School

Daventry Hill School (DHS) is a new co-educational 4 to 18 school for pupils with special educational needs. The school is constantly growing and expected to reach its full capacity of 175 children. Students at DHS have mild to profound learning difficulties or physical disabilities and 24.4% of pupils are eligible for free school meals. The ethos of the school is to provide a learning environment that sees and values them as a unique individual.

The Project

The school opened in September 2016 on a temporary site within Daventry University Technical College and moved to its permanent site in January 2017. The new, two storey, triangular shaped building has its own health clinic, soft play, sensory room, physiotherapy and hydrotherapy pool.

Project Timeline



Lessons Learnt from the Project

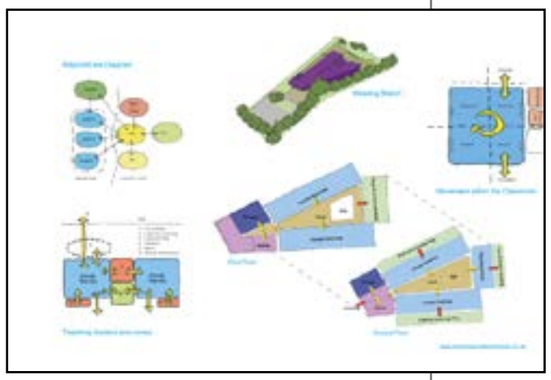
1. Development of educational vision

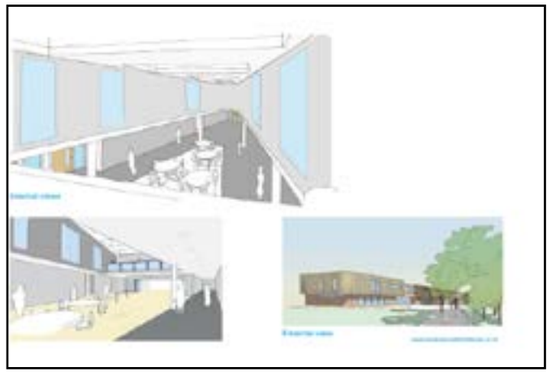
DHS emphasised **the importance of having a school team with the appropriate expertise from the very beginning.** Because of a lack of primary school staff at the beginning, DHS had to make many retrospective changes after occupation, for example adding outdoor provision. Whereas having all staff members at the early stage is not possible, DHS suggested the value of **consultations with schools with similar experiences.**

The headteacher also highlighted **the importance of understanding the specific requirements of the cohort.** However, for a SEN school the cohorts are constantly changing, therefore they are very difficult to predict. For this reason, it is important to make the building appropriately flexible and adaptable to future changes in cohorts.

> *The main issue has been that the building was designed for a cohort of students which we haven't actually achieved. The building was designed for a complex cohort, PMLD, SLD, and complex physical needs. But the actual cohort currently is made up of students with high functioning ASD, SEMH and MLD. Which is absolutely different ends of the spectrum in terms of their needs and what the building needs to provide to meet their needs.* ***It's about ensuring the building has the flexibility to adapt to the needs of the young people****, particularly from a special school's point of view. Your cohort can change every year depending on a range of different factors'- adaptability is key!*
>
> (Headteacher)

Credits: HSA





Credit: Hunters South Architects

Credit: Bam Construct UK

2. Design and construction

Cooperation with other facilities managers in other special schools who can provide information on the needs of the students and legislation requirements, such as classroom sizes for students in wheelchairs, or height of toilets can be very useful during the design phase.

'We had the support of a highly skilled facilities manager from one of the other local special schools. He just knew chapter and verse every single thing required and how it needed to be to suit the needs of the students while meeting legislation requirements.

(Headteacher)

Leadership change has caused some challenges for Daventry Hill School. The headteacher mentioned that '*Not being on board from day 1 has been my main challenge in terms of understanding the rationale behind the brief.*' . This again points to the importance of a range of stakeholders being involved from the outset.

3. Occupation

Building a school for the whole community was a very important part of Daventry Hill's mission. After opening the school, they used different strategies to attract people of Daventry to the new building. The café used by older students was made open to the public, encouraging the interaction of pupils with the community. After school hours, the building is available for use by the wider community. They also made sure that the community involvement is two-directional and that students get involved in the city's life outside the school building, This is aided by the school's central location.

The school faces unresolved post occupancy issues related to build quality. This highlights the importance of ensuring close scrutiny during the design and construction stage and paying appropriate attention to design and specification details at earlier stages. For example:

'It's little things, the school would be so much more functional if all the plug sockets were meal rather than plastic as they are so much more robust. Yes they are slightly more expensive but we find ourselves retrospectively having to re place them regularly. If they were addressed and factored into the build cost and deemed a standard specification item it would save double purchasing and the time and effort to refit.'

(Headteacher)

'Temperature is still an ongoing issue for us. It generally affects concentration. It has been taken into account but not sufficiently. The class rooms on the south side of the building in the summer were just too hot.'

(Headteacher)

Hackney New School

School to check

School Type	4-18 music specialist school
Project Type	New Build
Size	63 (School to update)
Students	8% EAL, 34% ethnic minority, 16% SEND
Location	Central Bristol, two lower floors at the Central Library.

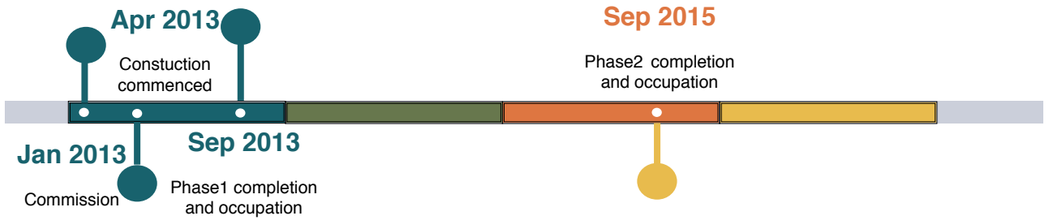
The School

Hackney New School (HNS) is a free school, established in 2013. It opened in September 2013 with four Year 7 classes of 25 pupils each. It anticipates a full complement of 700 pupils in 2019. The school has a special focus on music and provides resources to enable all pupils to learn to play a musical instrument. Approximately half of the pupils attending the school are eligible for additional government funding intended for disadvantaged pupils. This is well above the national average. The proportion of pupils who have a statement of special educational needs or receive planned additional support is above average. The proportion of pupils belonging to minority ethnic groups or who speak English as an additional language is well above the national average.
The ethos of Hackney New School is to equip students with the intellectual and emotional tools they need to lead an interesting, rewarding and diverse life. It is believed by the school that the four central elements of core vision are required to achieve this.

The project

The building scheme was completed in Summer 2015. The Downham Road site was opened on 5th September 2013 and accommodates 200 pupils. This building contains 8 classrooms plus 3 seminar rooms, a science lab, art space, music practice rooms and a communal area for meals, assembly, sport and entertainment. In this building, pupils remain in their classrooms of 25 while teachers move from one to another. The adjoining Kingsland Road site accommodates 300 students.

Project Timeline



Credit: unknown

Lessons Learnt From the Project

1. Development of Educational VIsion

Hackney New school's educational vision was inspired by an existing school in Vienna and after extensive **consultation with local parents and community members**, they developed this vision to fit into the busy urban environment in Hackney, London.

> *'I talked to parents and parents of every 11-year-old child that I could find. I went to community centres and playgrounds and swimming lessons and everything to talk….. we wanted to build a school that felt like home from home, which provides the kind of love and attention that is required to thrive and has access to the widest range of opportunities in life.'*
>
> (Governor)

However, some of the Hackney New School teachers that we interviewed mentioned the frustration of not being involved in the visioning stage, and the inconsistency between the school design and their pedagogic practices. This points to **the importance of involvement and leadership from the very beginning of the process.**

'My curriculum is severely impacted by the design of the building, because I can`t integrate technology with live instruments for example, because they are in separate rooms. We`ve got 8 practice rooms on this floor, now they are used for instrumental lessons and I can`t use them for curriculum lessons.

(Director of Music)

Whereas the involvement of the whole leadership team is not always possible and leadership team changes might happen, HNS suggested that **consultation with specialized teachers from other schools might be useful:**

> '*You will not be able to hire all your specialised teachers in the part where you were planning. But you should go out and talk to other specialised teachers in that process. Because we made assumptions about how music rooms work, the flows of the day, the timetable, the storage of music instruments, which are all quite wrong. We modelled them with the architects, but the architects have never run a music school. So go visit as many as settings which are really specific to your specialism as you possibly can.'*
>
> (Governor)

Image Credit: Unknown

2. Design and Construction

HNS started their design and **construction stage by consulting with other schools/teachers/professionals who have gone through a similar process,** especially those with the same governance structure and school specialism:

> 'I think you want to talk to somebody who has been through the project with the same governance structure. So ideally with the same contractor. To understand what the local landscape is like, so in terms of how does the planning permission work, what decisions need to be made, what time and who do you need to consult.'
>
> (Governor)

HNS also developed **a strategic overview of the cost plan at an early stage**, which helped them with the successful planning of the whole project:

> *'The DfE budget is a big chunk of money and you have to spend it wisely. If you don't think about that earlier in the game you end up paying way over the odds for things that should otherwise be quite simple.'*
>
> (Governor)

The governors **emphasised the importance of articulating your educational vision throughout the whole process**, which involved clear communication and constant negotiation with different stakeholders. For example, they did not accept the first site offered outside Hackney by the ESFA because it would not have matched with their music specialism. The translation of the educational vision into school buildings also requires the school team **paying close attention to details of the design, especially those in relation to the specialism and educational priorities of the school.** For

Hackney New School, the acoustics play an important role in their everyday practices.

'The acoustics of the practice rooms are challenging. They are not sound proofed. So you can hear drumming up and down the school.'

(Director of Music)

While the translation of the educational vision into design practice is not always easy and straightforward, the headteacher suggested that **beginning with the end picture** might be good practice for future new built schools.

'I would start from the sort of end picture; how many students are we going to have all together?; how many teachers are we going to have all together?; do we have enough classrooms for each member of staff, teaching group……'

(Headteacher)

Image Credit: unknown

3. Occupation

Many of the unresolved post-occupancy issues in HSN, for example, background noise, sunlight on whiteboard and small windows, could potentially have been avoided by keeping appropriate scrutiny at earlier stages.

Pupils and teachers that we interviewed also mentioned issues with movement, flow and transitions. This highlights how the impact of the **school building design can be closely tied with school timetables.** This could also be considered at an earlier design stage.

'(We need) more than one staircase that is wide enough for more than two people at a time. They also need to design the building with the timetables and consider the busiest times of the day and how students are moving between lessons in the building throughout the day'

(Pupil)

'… at the moment the issues that we have is that the students at the break time are quite difficult to control. It is quite difficult to control the flow of students without having a member of staff present on every single floor'.

(Teacher)

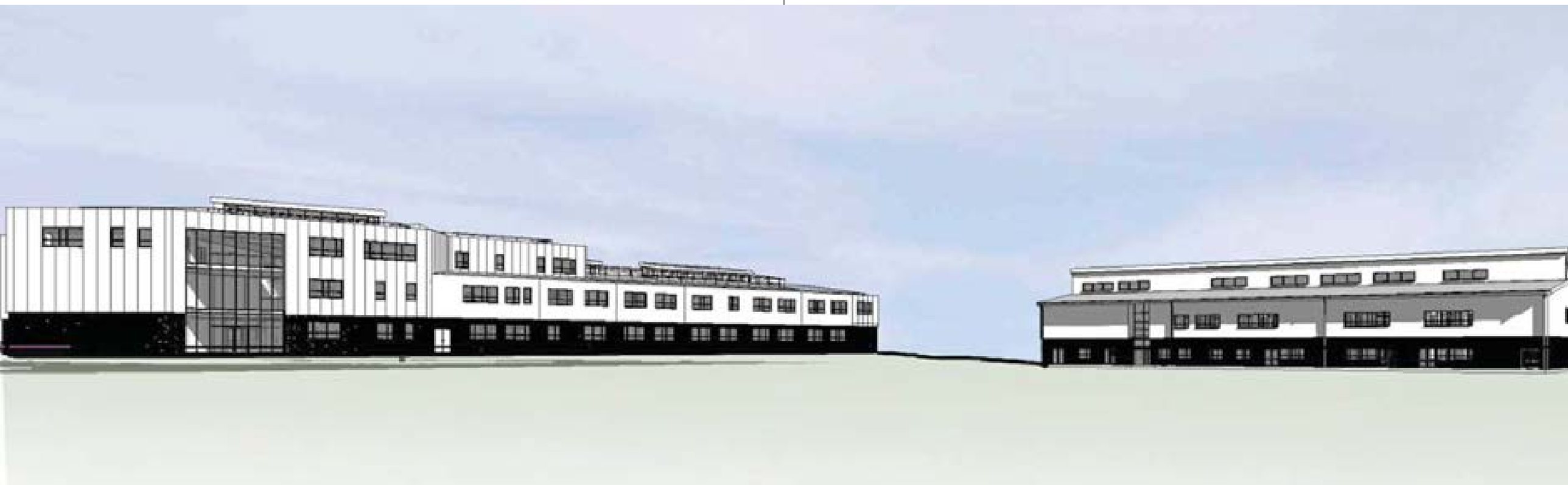
During occupation, **the school design shapes not only teaching and learning, but also students' social interactions.** The teachers expressed a desire for **more social spaces** for students.

'We would love to have a lot more space for the children to socialise and more sports facilities.'

(Teacher)

'Year 10s and 11s don`t need to run around, most of them just want a time when they can sit down with their friends and chill-out, have a conversation. It`s really the key stage 3 who need the space to run around but we can`t do that because of the limited space.'

(Teacher)



Marine Academy Primary

School Type	4-11 mainstream primary school
Project Type	New build
Size	full capacity of 198? children
Students	proportion of students eligible for pupil premium above national average, ethnic minority, SEND and EAL students proportion below national average
Location	King's Tamerton area of Plymouth

The School

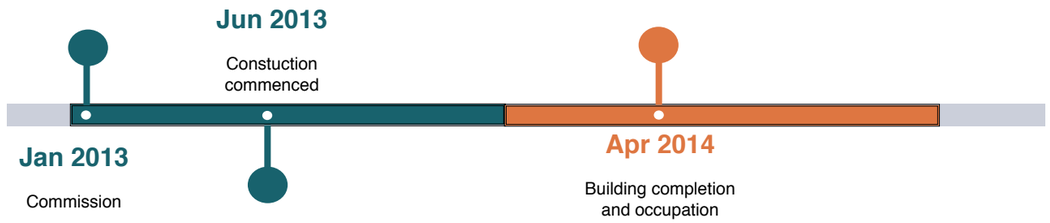
Marine Academy Primary is a 4 to 11 primary school, which opened in 2013 as part of the government's free school programme. It provides places for XX number pupils. The majority of students come from a White British background and only a small minority speaks English as a second language. The proportion of students eligible for the pupil premium is above the national average and those with special education needs is below the national average. The school describes its mission as to "To provide an outstanding education that ensures all pupils reach their greatest potential and live by life's highest values."

Credit: Stride Treglown

The Project

The vision for the project was to create a 'hub on the hill', an all age learning campus to ensure the opportunity for early intervention in the lives of those from the surrounding community, where intergenerational workless-ness is a long term problem. The school comprises 2,074 sq.m. of school space, providing a main entrance, reception, Hall, storage offices, 14 classrooms, toilets, external landscaping and car parking for 420 pupils. Some of the classrooms have a dividing partition between them which can be opened up to create a bigger open learning space for two classes when needed, and the corridors have special alcoves housing computers and breakout spaces.

Project Timeline



Lessons Learnt From the Project

1. Development of educational vision

Marine Academy Primary is a small school and started with a very small team of two senior leaders: the Executive Head and the English and Curriculum Leader. Yet both of them were fully involved throughout the whole project. Their chair of governors was also deeply involved and had timely inputs in monthly meetings.

The school leadership team decided to have a school **without specialism**, but one that focused on providing outstanding **traditional education** to fulfil the needs of the community.

'We wanted to be a traditional primary school that was going to be outstanding and that was really going to fulfil the needs of our community, which is a very, very deprived community, and needed a really good education. And so we kept it simple…I do think if you are a school that's got a different specialism, you're going to need something different, but for us we just needed good traditional classrooms.'

(Head)

When being asked about the most important thing for headteachers to do during the visioning stage, Marine Academy highlighted the importance of **having a clear educational vision and early involvement.**

'*I think to look at the designs early on and to really talk to the architect about your requirements but also to have very clearly in your head what you want the inside to look like'.*

(Head)

2. Design and Construction

Although Marine Academy suggested that in general, the standardised design provided by the contractor and the design team 'worked really well and is a perfect size building for a two form entry school in terms of classroom sizes'(Head), **the importance of keeping appropriate scrutiny of the developing design** was emphasised.

'I think more time [for consultation] but also more information about some of the things that have a direct impact on our students. When you're presented with your design you think 'this is going to be really great' and you're not going to think about everything, you don't think about it until you're in it.'

(Head)

'to think about the space that you've got outside, don't compromise your outdoor space for a bigger building.'

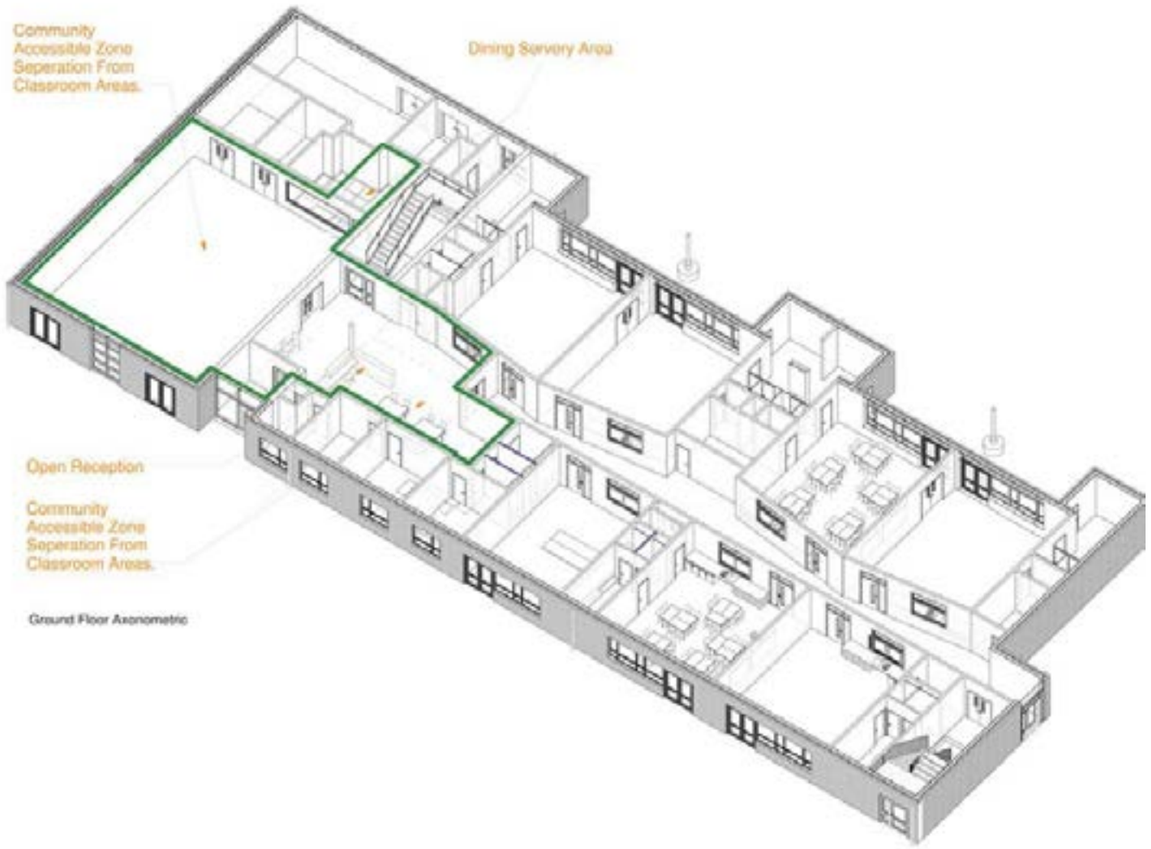
(Head)

The headteachers and senior staff also mentioned the frustration of not having enough support/guidance/ access to expertise during the design and construction stage. This points to **the importance of consultation and reference to existing resources.**

'I spent a lot of time researching around the size toilets we would need in a reception classroom in comparison to a Year 4 classroom. Things like that you think there should be a document that says in schools, you've got 5 year old children, they need this size toilets'

(Head)

Credit: Stride Treglown



Credit: Stride Treglown

3. Occupation

School design can not only support pedagogy, but also help with behaviour management and students' feeling of safety. The impact of school design on teaching practices and school culture/ behaviour is well illustrated in our interview with teachers and the head teacher from Marine Academy. For example, glass windows between the classrooms enable the teachers to watch over the children while still allowing them space and freedom of movement.

> *'The fact that we've got so many glass windows across our classrooms too, it means that the children can go out into the corridor or into the library if they need a minute and we can still see them. So there's not that pressure of being right next to them to make sure they're safe and happy'*
>
> (Teacher)

Credit: Stride Treglown

Credit: Stride Treglown

The flexibility of the design allows for **school spaces in Marine Academy to be used for multi-purposes.** For example, the staircase was designed to be big enough to be used as a space for transition and a space for social interaction. Corridors were also designed to be big enough for other purposes, e.g. learning space with desks and computers.

> *'it's also a chance for the children to interact as well, if the children are coming up the stairs and along the corridor, there's enough space for them to be able to stop and have a chat…and they're not being pressured to move along because there are people bustling past, they've got space to enjoy their school and enjoy the people around them'*
>
> (teacher)

> *'with our corridors, it's more than a corridor because we've got the computers there and tables for the children to use and to work at, so you're not cramped in a corridor'*
>
> (teacher)

Credit: Hufton Crow

Plymouth School of Creative Arts

School Type	4-16 mainstream school with art specialism
Project Type	New Build
Size	6,920 m2 (Gross area)
Students	A higher than average number of disadvantaged students - 50 percent average. SEND is higher too, especially in terms of high need. EHCP.average for whole school is 3.5 percent compared to 2.1 percent nationally. The school is in first percentile of need nationally in terms of Lower Super Output Areas
Location	City Centre, Plymouth

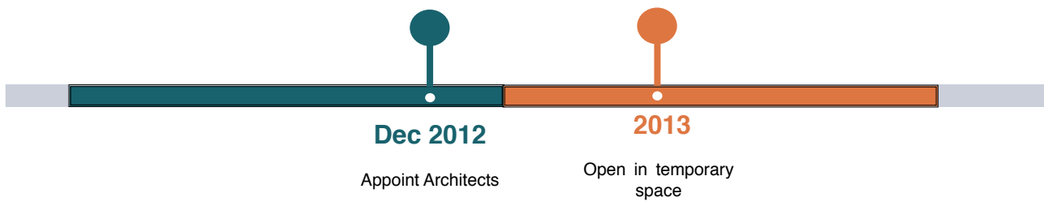
The School

Plymouth School of Creative Arts (PSCA) is a 4-16 mainstream school in the city centre of Plymouth. It is a school with art specialism, but one that also focuses on the academic excellence of students in all subjects. In terms of student demographics, PSCA has an average proportion of disadvantaged students eligible for pupil premium support, below average proportion of students from minority ethnic backgrounds, and below average proportion of students with special educational needs or disabilities.

The Project

PSCA began to work with Feilden Clegg Bradley Studios in 2011. The design of the school building, affectionately known as The Red House, reflects the institution's art specialism, creating a new educational habitat for new ways of teaching. The 6,920 m2 building houses art facilities, such as jewellery studios, print and textile design workshops and a glass-blowing house, which means students have access to the many artists working in the school. Despite the highly constrained budget, a high quality build was achieved with a range of large -day-lit spaces that open out to the city. The Red House is a beacon for creative learning in a challenging and diverse community.
"We didn't really understand quite how wonderfully experimental it was really going to become. Could it be like a gallery, which would make it really exciting? Is it a theatre, where there is performance going on? Or is it actually just a series of wonderful studio workshop spaces? And so a hybrid of all of those kind of space types came together to create the basis for the school."
(Andy Theobald, Feliden Clegg Bradley Studios)

Project Timeline



Lessons Learnt from the Project

1. Development of educational vision

A clear educational vision in advance of the consultation process is very important. Schools must establish the type of education they want to offer, together with the educational goals that go beyond academic achievement.

‘*One of the things at the design stage which is fundamental, is how clear the school is on their purpose of wanting to be different. Because if they are trying to get great exam results, that’s a very different purpose from trying to help young people find their way in a rapidly changing world. Then you are actively making things different- for example having studios but not classrooms. And then the space will push you towards that intention and support your purpose.’*

(Head)

Once the educational vision is articulated, the consultation process can begin to outline how the physical building can support teaching and learning in practice, reflecting and enhancing the original educational vision. For example, the change from traditional classroom to studios and sub-divisible spaces support unconventional teaching methods, to enhance this school’s specific approach to learning.

Credit: Hufton Crow

2. Design and construction

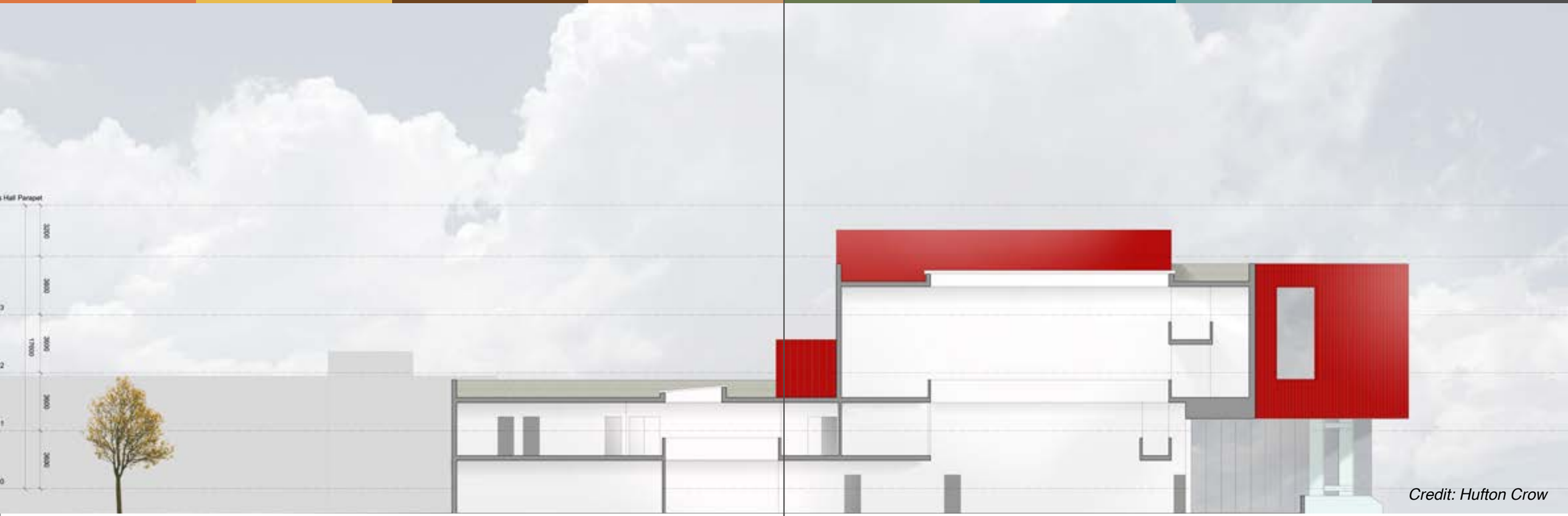
The teachers we interviewed highlighted the importance of ‘partnership’ and ‘Working with others to explore as many perspectives as possible.’ (Teacher) This included involving as many students as we can in the early processes of design and construction. They were taken on tours of the site and were encouraged to express what they found to be important in the new building of the school.

‘What was really helpful with that process was that the students provided us with different perspectives. We asked them to go on a tour to look at the space and to say what might be important to them and how are we going to use the building in different ways.’

(Teacher)

Similar consultations were also conducted with parents and the wider community.

Credit: Hufton Crow



Credit: Hufton Crow

3. Occupation

Spaces do influence teaching practice and PSCA serves as a great example for that. The Head gave a vivid metaphor to illustrate this relationship:

> '*The example I always give is imaging wrestling in a cathedral – it wouldn't feel comfortable. So place does have an impact, you're just not always conscious of it.'*
>
> (Head Teacher)

For example, turning the teachers' office into an open plan space supported the cooperation of staff. It allowed greater connectedness of teachers, which lead to the sharing of information, learning from one another, leading to the creation of new pedagogic approaches. This greater cooperation between the teachers became visible for the students as well, positively influencing their learning.

> '*The office base that we started in was a large open plan place. I think it supported some aspects of learning for staff. That's where we built lots of pedagogy approaches. The open-space allows teachers to learn from each other without having to book a meeting room. It is mutually active space where you can visually see it.'*
>
> (Head Teacher)

> *'I think it is essentially the open space… there just isn`t really that kind of separation and that also plays into the part of the teachers themselves as people.'*
>
> (pupil)

The phase after occupation is the process of learning how to use the new building and how to amend teaching practice to take full advantage of the new design. In PSCA, the change from traditional classrooms to open plan spaces required creativity and learning

both from teachers and students.

> *'I think the bit I will talk about is learning how to use the building, because one of the things you want to do is make sure that your curriculum is very much tied into the space for that to happen. It does take time. You have got to learn literally how to move around the place when you first go in.'*
>
> (Head Teacher)

This learning process can be challenging as people often rely on spaces as if they were set. The successful use of innovative school spaces often requires people to move out of their comfort zone.

> *'I think flexible and agile are very different. I think agility has less to do with space. Be cause agility is being able to think in different ways, to respond to different needs; because one of the things that happened in the new design is that when something doesn't work (and of course things won't all work), it is problematic for people rely on space as if it was set. Then when something goes wrong in a new building, what people do is pull back to the past. It's the most comfortable. The agility bit for me is the ability to think differently. I think one of the things that we have to learn to do as educators is to work in an agile manner be cause what most educators do is however the room is setup is how they will use it.'*
>
> (Head Teacher)

While the new design encouraged greater collaboration between the teachers and students, the lack of walls cutting down the sound caused difficulties with simultaneous group teaching. Another major post-occupancy issue was that the ventilation and climate control system didn't work as intended. So the school now has to install air conditioning or change the windows post occupancy.

West London Free School

School Type	11-18 mainstream school with music specialism
Project Type	refurbishment, remodelling and extension
School Size	250 students
Students	SEND and SEN students proportion slightly lower than average, about half of the students are EAL students
Location	Hammersmith, West London

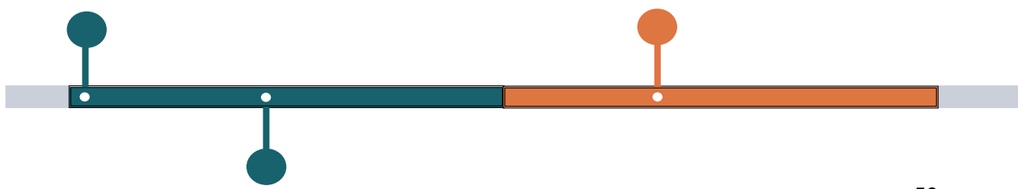
The school

The West London Free School is a co-educational school for about 250 students aged 11 to 18 in Hammersmith, West London. It was opened in 2011 as one of the first free schools in the country. Approximately half of the pupils speak English as an additional language, although none at an early stage. The proportion of disabled pupils and those with special educational needs is slightly lower than average. The school has a distinct and very clear ethos, which is to provide a classical liberal education for pupils of all backgrounds, emphasising scholarship and academic excellence. The school website identifies a number of key characteristics of The West London Free School including small size class sizes, a competitive atmosphere, specialism in music and a broad range of extra-curricular activities.

The project

The school worked with TP Bennett Architects and Willmott Dixon Construction. One of the existing buildings, the Lodge House, was converted into a Music Centre providing a range of practice rooms in this music specialism school. Another existing building, Palingswick House, was fully refurbished including labs, art rooms, a canteen and a library. A 32,000 square foot extension at the rear of the house provides a traditional classroom wing including science and arts faculties, and a multifunctional hall capable of accommodating whole school assemblies.

Project Timeline



Lessons Learnt From the Project

1. Development of Educational Vision

As a result of leadership changes, the current Head of Operations was not involved in the development of the educational vision. She highlighted the importance of being involved from the very beginning, and also the importance of integrating educational vision into the designing and planning process:

'*The vision had been established – long been established – because there was a very long planning process and in a way that was part of the problem because I think the design had happened years earlier and then it was assumed that was all dealt with and then we were kind of more focused on sorting out the planning issues and getting the project off the ground and suddenly the design was set and it was too late to change anything.*'

(Head of Operations)

The Head of Operations also mentioned the struggle of maintaining a balance between the functionality of the building and school ethos/ aesthetics.

'*I think where I see the vision coming from (although having not been involved in the process) is that they wanted to keep this classical façade to fit our classical liberal ethos to make sure that the school seemed robust and traditional and all of those things. But because of that we lose quite a lot of teaching space in this building…. But it's a beautiful building, it would have been a shame to lose it.'*

(Head of Operations)

Image Credit: Unknown

Credits: Online

1. Development of Educational Vision

At the stage of design and construction, the Head of Operations suggested future new build schools **keep appropriate scrutiny of design and make sure that the building design is fit for purpose**. 'You should examine the design very carefully because there are things that one didn't even question'. One example of this is the changes that the school managed to make on the parapet wall:

> *'we had an exterior playground, you know, reception pupils have to have indoor-out door space and so the reception play ground was a sort of strip on the ground floor and then there was a first floor entrance for community users and I noticed that the parapet wall was quite low so that any member of the public could just come and stand there and watch children at play which didn't feel right to me so it was something I did manage to get changed'.*
>
> (Head of Operations)

However, the sports hall at West London Free School is not as fit for purpose as it should be. Closer scrutiny of the design and appropriate consultation at an earlier stage could have enabled a better outcome:

> *'What I feel is that architects draw it up and it looks like it's a sports hall but actually is it a sports hall? They're not necessarily consulting with sports professionals who know what you need in a sports hall…we've painted all sorts of sports courts on there but realistically most of those sports can't be played on there'*
>
> (Head of Operations)

2. Design and Construction

After occupation teachers from West London Free school underwent **a learning period to make the best use of the building.** One of the teachers suggested 'you've got to have time to get use to the building to find out how it works!'

The impact of design on practice is also well illustrated in our interviews with teachers. For example the impact of staircase design on circulation, timetable and school atmosphere:

> *'3 or 4 classrooms that all directly leave on to the central point of the stairs so it all becomes this whole big backlog with 3 separate classrooms all emptying into this one small space and then 5 or 6 classrooms behind it all trying to get through as well. The impact it has is that the building feels busy, hectic, people feel a bit more stressed, but also on top of that it means that lessons start a couple of minutes late and there are places in the school where they routinely start late because they just suffer as a general rule.'*
>
> (Teacher)

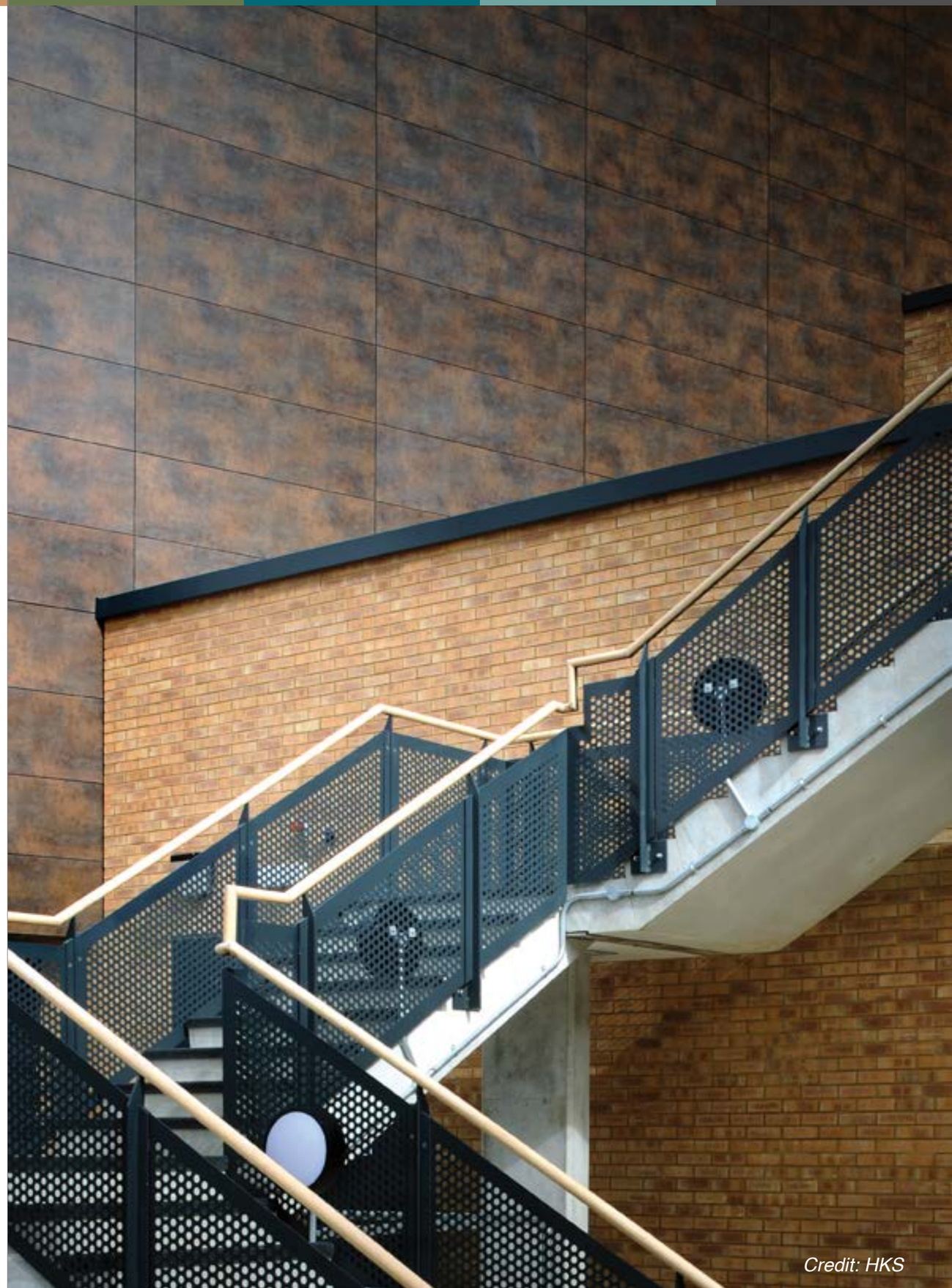
There are still some unresolved **post-occupancy issues.** For example, the mechanically controlled ventilation and temperature system causes teachers to feel a lack of control over their environment. It is therefore advisable for future new built schools to think about these potential challenges considering ventilation and climate control systems.

> *'We had the hilarious situation where we are not supposed to open the windows in this building because of pollutants from the road – but they're openable, so obviously peple will open them – and then you have units which are supposed to purge periodically when C02 levels get to a certain level they blast…but the teachers found it very noisy so they switched them off…. the reality is humans don't like to feel they have no control over their environment.'*
>
> (Head of Operations)

Workshop 2: Key Challenges

We consulted with schools at different stages but all are currently in the process of building their new schools.

In a workshop, they were able to share their experiences with us and highlight some of the key challenges they are facing. Constraints on budget and time appeared to be an issue for multiple schools. Keeping within budget was articulated as the main difficulty in developing designs to support an educational vision. In addition, the speed of the process means that decisions have to be made within a very short space of time, often not allowing a sufficient period for headteachers and project managers to consult and involve the full school staff and students in the decision making process. Not only constraints on time, but the lack of access to expert knowledge regarding buildings, finance, regulations was a challenge for many schools and made the decision making process very difficult. In many cases the official guidelines available did not provide sufficient information necessary for decision making. Several schools mentioned the tension they experienced between educationalists and designers in the process, especially in the case of ‘all-through’ and special schools. Pedagogues understand that students have very different needs based on their age and abilities and that the school building needs to support a range of requirements. Special schools also have to take into account the fluidity of their student cohort and ensure the building is flexible enough for changes in the future. ‘One-size-fits-all’ formulas often preferred by architects do not always provide solutions to these problems. The schools in our workshop suggested that it would be very helpful for them to see examples of designs of finished schools to gain knowledge on what solutions worked and what did not work in practice.



Credit: HKS

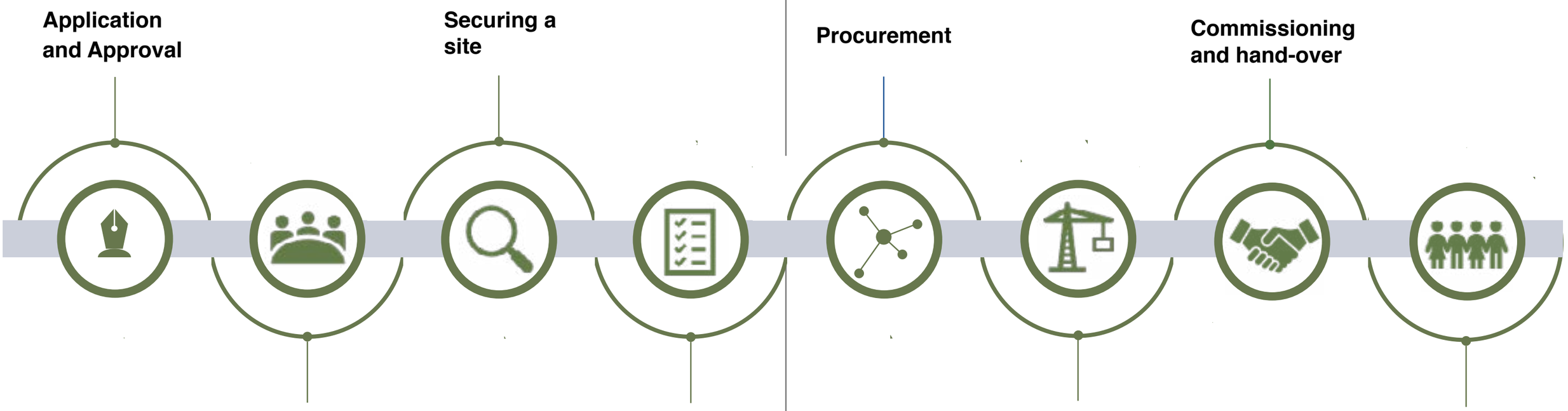
05. Process Milestones

Introduction

This section describes an overview of the school building process and key questions that our partner schools have identified for each stage.

Two key stages: The feasibility stage and Contractor's review
Schools need to ensure that their educational vision is very clear from the onset of the design process and they understand the pedagogic implications and priorities of their educational vision on the design brief especially during the feasibility and the contractor's review process.

It is important for the schools to ensure that the right representatives attend those meetings in the critical stages and are prepared to make sure that they make informed decisions so that the proposed designs will be fit for purpose and can deliver the educational vision as envisioned within the budget.



1.

Application and Approval

Key task(s):

Completing the Department for Education's application form, the application form include your (a) vision, (b) education plan and (c) a detailed case for why the school is needed.

Key stakeholders:

- NSN offers support for application development by offering 1:1 meetings , workshops and a collection of useful resources e.g. xxx.
- DfE assesses your application against their criteria and decide whether or not to invite you to attend an interview where they will question you on your proposal. They then decide whether to approve or reject your proposal based on your application and your performance at interview.
- DfE and ESFA assess approved applications and assign schools to different project teams

Key Questions:

- Is the educational vision appropriate for the community which the school serves?
- Do you have good knowledge spread within your school leadership team? (e.g. technical, educational, commercial.)
- Is the educational vision agreed among different stakeholders? (e.g. your leadership team, local stakeholders.)
- Can the school start to understand and develop your school's specific brief requirements (see ESFA school specific brief) that will be crucial to the delivery of your educational vision? Are the school specific brief requirements affordable within the proposed budget, can the school specific brief requirements be prioritised?

Time Scale:

The amount of time you need to complete your application will vary depending on your experience, the complexity of your context and how developed your proposals are. NSN suggests it usually takes 3-6 months to develop a free school application, and up to 6 months for DfE assessment

2.

Kick off meeting

Key task(s):

Making sure that the appropriate school representatives attend the meetings with your ESFA assigned Project Director and Manager to (a) understand the upcoming process and timescales, (b) transfer your knowledge regarding your school and site requirements to deliver your educational vision, and (c) develop a strong working relationship with your project director and manager.

Key Stakeholders:

- Project Managers (PM) are responsible for all operational issues relating to the delivery of the project including timescales. PMs communicate with the internal ESFA team and the Project Technical Team (architects, contractors etc.)
- Project Directors (PD) are not overly involved in the details of each project. They are responsible for unresolved issues with PM, and the management of next steps & potential risks for the project. PDs are the key links with DfE and key persons to contact to secure project budget.

Key Questions:

- Do you have the appropriate school representatives attending the meetings?
- Do you have good knowledge about the next steps in the process, and the role that key stakeholders play in it?
- Is your educational vision clearly communicated to your project director and manager?
- Have you clearly communicated your school specific brief requirements crucial to the delivery of your educational vision to your project director and manager? With support from the ESFA, can you prioritise your school specific brief requirements within the budget?
- What is the likelihood of securing a suitable site?

Time Scale:

NSN suggest that this phase should move quickly, usually within a month or two

3.

Securing a site

Key tasks:

Confirm a suitable site has been secured that can be delivered in the timescale and represents value for money. Agree HOTs (Head of Terms), which contain a set of key commercial terms and principles upon which the property transaction would proceed.

3.1 If your application included an identified site
Swift progress can be made towards HOT with support from the ESFA and NSN

3.2 If a site search is required
A LocatED search is commissioned to source sites that meet the requirements of the school and ESFA's criteria.
Agree HOTs after securing the site

Key Stakeholders:

- ESFA and NSN will provide support and guidance.
- LocatED is a government-owned property company, responsible for buying and developing sites in England to help meet the demand for free school sites
- Consider and seek Local Authority (LA) engagement if appropriate.

Key Questions:

- What is commercial market like in that area? (e.g. There may be other schools nearby, there may be other property issues like ground contamination).
- Is there good communication between you and other stakeholders?
- Is there a balance between your educational vision and the feasibility of sites?

Timescale:

It takes usually 1-3 months for schools with an identified site, and 1-12 months for schools that need a site search.

4.

Feasibility stage: Assessing the feasibility of the site

Key tasks:

- Actively engage and support the development of your educational vision into the design brief and the output specification. Schedule of accommodation, size of classrooms, concepts of design are all developed during this stage. Be aware that every key detail that may have a pedagogic impact should be considered carefully and consulted with your school community. Your Principle Designate (PD) and department heads should be actively involved at this phase as necessary and where appropriate.
- Balance the ESFA budget and mandatory requirements with your school specific requirements.

Key stakeholders:

- Your team with the relevant skills, including PD and department heads
- The ESFA and NSN team will support you during this stage (e.g. your PD, PM, project technical team)
- Involvement of architects, engineers and other design agencies to develop the design of the school

Key Questions:

School leadership team should consider:
The provisions of the school generic brief (ESFA school generic brief) and crucially, the school specific brief requirements that will be special/additional requirements that are required in order to deliver your educational vision (ESFA school generic brief).
Can the school specific brief requirements be delivered within the budget? Can the school specific brief requirements be prioritised and balanced within the budget?

School Design:
The school entrance is an important place operationally and to convey a sense of place and school identity, the design of the school entrance and arrival sequence should be considered carefully.
Is there a good relationship/ratio of group rooms to teaching spaces?
Multi functional –do spaces need to be multi functional, will they be fit for purpose for all proposed requirements, will there be sufficient time & resources to adapt the space for each purpose through a school day and school year?
Any deviations/special requirements from the standard specifications will need to be clearly articulated early in the design process?
Have dining requirements and toilet / shower facilities been carefully considered?
External fabric & internal elements and finishes e.g. floor finishes, transparency of guarding on staircases, Control of services and environmental conditions should be considered carefully, local control should be provided where possible to allow teachers and students to improve their internal climate.

Schools should consider carefully how to spend their pre-opening budget to support and develop their educational vision or school specific brief. Expert support and consultation for specific areasat an early phase may minimise risks and avoid changes at future phases.

Timescale:

Usually 3 months but may be longer

5.

Procurement/ Appointing a contractor

Key tasks:

- Submission of planning application and getting it approved by Local Authority (LA)
- Getting final budget approved and entering the contract with the main constructor

Key stakeholders:

- There will be weekly meetings with your project team where the feasibility is reviewed
- ESFA will go through an internal approval process to secure a budget. ESFA will manage a tender process to identify the best provider from a framework agreement of pre-approved constructors.
- The main contractor will enter into a Development Agreement contract with a defined specification and date on which to deliver it. They will be commercially incentivised to meet this date.
- The proposed design will require planning approval from the local planning authority. You might face resistance from the community, especially from proximal neighbours

Key Questions:

- Schools should ask about track record of the design and construction team, review buildings they have designed and built.
- Schools should ensure they have the resources and support to carefully review the budget and defined specifications. Will the agreed specifications and budget be able to deliver the educational vision of the school? Budgets are always challenging, if not, will the compromises be acceptable for the school community?

Timescale:

Usually takes 1-2 months. The route varies depending on the size and risks of the scheme.

6.

Building and construction

Key tasks:

- No major changes/ alterations that impact on costs during this stage.
- There will be regular onsite meetings throughout construction that the ESFA PM will attend and sign evaluation forms.
- From this point, your school should be planning specific dates for new students and staff to move in.

Key stakeholders:

- The contractors will be managing the whole project and programme and will usually sub-contract packages of work to subcontractors so co-ordination & communication will be critical.
- The project on site will be tightly reviewed by an ESFA PM and assigned technical consultants.

Key Questions:

- The ESFA will review the construction process, co-ordination and build quality but when appropriate it is important to review specific areas of the project that will have a pedagogic impact on teachers and students?
- Does an independent expert (clerk of works) need to be employed during this phase to ensure quality of build? Quality compliance monitoring will often improve the outcome of the build in particular with complex sites or building designs.
- Is the school prepared for the transition into the new building? A process of learning is crucial to an effective transition and occupation of a new building for all key groups of the school community from the facilities manager to teachers and students.

Timescale:

Primary School: c. 13 months
Secondary School: c. 18 – 22 months
Special Schools new build - between 30 – 55 months
AP/SEND School: c. 12 months (NSN, 2018)

7. Commissioning and hand-over process

Key task(s):

- The commissioning and handover process is one of the most important phases of the school building process. The school must ensure that all key groups, from facilities managers to teachers and students of the school community, are prepared through an effective process of learning -how to use the new building. The school must be fit for purpose and to provide key stakeholders the time to understand the new opportunities that the new building will provide for teaching and learning.
- Ensuring good operational procedures to learn how to use the buildings as designed and control systems to reduce risks and unforeseen operational and maintenance costs.

Key stakeholders:

- Advisors from ESFA will review the school buildings
- Your business manager or property manager to take overall responsibility

Key Questions:

- This handover process will be documented and all commissioning services tested.
- There should be a properly modelled programme of commissioning with all key stakeholders and operations team and a clearly articulated review process. What happens if things don't work? The school facilities team will need resources and time to be deeply engaged during this phase.

Timescale:

Usually 1 month, final accounts may take up to 3 months

8. Post occupation

Key Task(s):

- The post occupation period is a phase of continual learning and adjustments to the new building environment. Learning how to use new control systems and developing new pedagogic practices to optimise the opportunities a new building may offer.
- How can schools continue to have conversations about discovering new ways to use the new building and collectively sharing the processes of learning?

Key Questions:

- How can the school set up a comprehensive building performance evaluation process for specific aspects of the new building across different user groups (from facilities managers to teachers, students and parents)?
-
- How can the school capture 'snagging' or control systems issues promptly and have an effective management plan for change, adaptation and remediation?
-
- How can the school learn to use the new building effectively in all modes (e.g. day, night)? solve any technical glitches, make sure it performs environmentally as designed , need plan of adaptation and remediation for defects
-
- Practical completion – there will always be a long list of outstanding issues to be resolved by the contractors. This will need an effective plan for each issue to be remediated within an approved programme that does not cause disruption to the daily operations of a school.

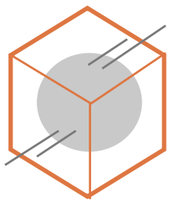
Key stakeholders:

Your school staff team and student cohort

Timescale

N/A

06. Ten Lessons For School Design



1.
A clear vision of what type of school we are going to be? What type(s) of learning will take place? A vision that develops from conversations with staff, pupils and governors

The development of an effective vision depends on a series of learning conversations. There are so many different people and professions involved in the design and construction of a school that a very deliberate strategy for communication, involvement and above all, learning must be developed right from the very start of the project.

2.
Sharing the vision with the design team and contractors

Communication between educators and architects, engineers and contractors requires careful thought and preparation. Each discipline has developed their own ways of thinking and talking and their priorities do not always align. Every attempt should be made to provide a very clear exposition of the vision with professionals who may need to be briefed on the priorities that underpin it.

3.
Using that vision to identify clear priorities in the design process.

Conversations between design, construction and education professionals should be thought of as the basis for establishing common knowledge about the vision and common ground for the development of the project. Budgets will always be tight but it is important that educational priorities are defined clearly at the outset of the design process in order for all parties to understand how the limitations of the budget will impact on the delivery of the proposed educational vision.

4.
Reflecting on the future and the place of flexibility and adaptability

School priorities and needs for space change over time, often as leadership changes and /or as national priorities change. It is important that matters of flexibility and adaptability are discussed with designers in order that a building can respond to such shifts or that the limitations of the design on different pedagogic approaches are understood early on.

5.
Envisaging movement, flow and transitions of people

Schools are busy places. A great deal of movement and transition typifies a normal working day. Conversations need to take place about the ways in which movement through time can be managed in a design that is under consideration.

6.
Envisaging the impact of noise, lighting and ventilation

Careful consideration should be given to the acoustics standards of learning environments as well as the lighting and ventilation demands, in particular the levels of control for different groups of occupants from students and teachers to facilities managers. Conversations about these issues can be difficult because of the specialist knowledge and language involved. All parties need to pay attention to clear communication and explication of technical matters.

Learning to attend to the details of the design that have pedagogic implications- both inside and outside of the building and being proactive in accessing information and support during the design and construction stage

Designing and constructing a new school is complex and demanding task. It is vital that ‘an eye for detail’ is retained on areas that will have implications on pedagogic practice. This may involve educationalists asking for more detail about particular aspects of the design from their colleagues in other professions

7.
Understanding the governance, procurement and stakeholder processes.

NSN and ESFA have produced excellent guidance on governance, procurement and stakeholder processes. This is a very important source of valuable information.

8.
Having a strategic overview of the cost and the pedagogic implications of design decisions

As with any complex investment in a new asset, costs can become a challenge. Late decisions about changes in design can be very costly and must be avoided if at all possible. A strategic overview of costings should be informed by a clear hierarchy of priorities. That may be of the form: what must we have to deliver our educational vision; what should we try and keep in the design; what would be desirable if costs allow.

9.
Preparing for learning how to use the new building

The successful handover and occupation of a new building through time also requires learning conversations. Many of the environmental systems are complex and key personnel need to learn how to use them, whether these be concerned with heating, lighting, ventilation or any other aspects to ensure the building is functioning as designed. Similarly, educators need to develop skills, knowledge and understanding of the pedagogic possibilities that a new building affords and the optimal ways of teaching and learning within it.

10.
Design is a continuing and iterative process which includes preparing to move in and adapting to the space.

07.Additional Resources

Included below are publications and organisations that we referred to while writing this guidance. They could be useful for head teachers, school building commissioners, teachers for further information and more case studies. There are three sub-sections in Additional Resources:

1. School Building Guidance
2. Literature on the school design process
3. Literature on school Design, POE and wider benefits

1. School Building Guidance

We included the most up-to-date guidance from DfE, ESFA, NSN, CABE, UBT, RIBA, BIBSE and others, which are all relevant to future new build schools. A brief description of these different organisations is also included.

DfE and ESFA (former name EFA)

- The Department for Education (DfE) is the ministerial department responsible for children's services and education.
- Education Funding Agency (EFA) was replaced by Education and Skills Funding Agency (ESFA) in April 2017. ESFA is the executive agency of the DfE accountable for funding education. They will provide the capital funding and expertise to secure your site and construct your school buildings.

Building Bulletin (BB)

The following Building Bulletins (from BB80 onward) published by DfE and ESFA give non-statutory guidance on the needs of school design from a variety of topics.

BB No.	Name	Year published	Link	Comments
80	Science accommodation in secondary schools	2004	http://science.cleapss.org.uk/Resource/Building-Bulletin-80.pdf	This document offers guidance to those concerned with the provision of science accommodation, whether through new construction or the adaptation of existing buildings.
81	Design and Technology Accommodation in Secondary Schools	2004	http://science.cleapss.org.uk/Resource/Building-Bulletin-81-Design-Technology.pdf	This document offers guidance to anyone involved with the briefing and design processes for design and technology accommodation.
82	Area Guidelines for Schools		replaced by BB98	
83	Schools' Environmental Assessment Methods	1996		
84	School Boarding Accommodation	1997	http://webarchive.nationalarchives.gov.	BB84 contains non-statutory guidance describing good practice and its implications for accommodation. It should help those responsible for briefing and designing boarding accommodation across all school sectors to make well informed decisions.
85	Schools Grounds: a Guide to Good Practice	1997		
86	Music Accommodation in Secondary Schools	1997	http://science.cleapss.org.uk/Resource/DFEE-Building-Bulletin-86.pdf	This document provides guidance on accommodation in secondary schools, concentrating on the needs of 11-16-year-old pupils.
87	Guidelines for Environmental Design in Schools	Replaced by BB93		
88	Fume Cupboards in Schools	1998	www.cleapss.org.uk/attachments/article/0/G9-1.pdf?Secondary/Science/Guides.pdf	This Building Bulletin reviews the requirements for fume cupboards used in schools and colleges for teaching the sciences, mainly chemistry and biology, up to A-level GCE. It covers the level of provision that is desirable to meet curriculum needs and makes recommendations for good practice in the design.

89	Art accommodation in secondary schools	1998		
90	Lighting Design for Schools	1999	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/276707/Building_Bulletin_90_lighting_design_for_schools.pdf	The publication addresses the lighting of both primary and secondary schools
91	Access for Disabled People to School Buildings	Replaced by BB102		
92	Modern Foreign Languages Accommodation	2000	http://science.cleapss.org.uk/resource/DFEE-Building-Bulletin-92.pdf	This bulletin deals with the design, setting up and running of a building project for MFLs in a secondary school (some of the advice will also be relevant to similar projects in other departments). It covers a broad range of issues, from furniture and equipment to new building work.
93	Acoustic Design of Schools	2015	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/400784/BB93_February_2015.pdf	This document sets out minimum performance standards for the acoustics of school buildings, and describes the normal means of demonstrating compliance with the Building Regulations.
94	Inclusive School Design	Replaced by BB102		
95	SCHOOLS FOR THE FUTURE: Designs for Learning Communities	2002		

96	Meeting the Educational Needs of Children and Young People in Hospital	2003	http://www.wales.nhs.uk/sites3/Documents/254/BB96.pdf	This guide is designed to accompany and complement 'Hospital accommodation for children and young people'. Based upon information from a survey of best practices, this guide aims to assist the process of designing education provision in hospitals, whether new or refurbished.
97	Not available			This document is designed to assist headteachers, governors and other stakeholders in the creation of a brief for any major project in a mainstream secondary school, with particular emphasis on 1. The process of creating a brief 2. The key design criteria that should be involved in the brief 3. Minimum building area requirement for the various categories of school spaces 4. Minimum site area requirement for the various categories of school spaces
98	Briefing Framework for Secondary School Projects	2014	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/288107/building_bulletin_98_-_briefing_framework_for_secondary_school_projects.pdf	
99	Briefing Framework for Primary School Projects.	2014	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/288108/building_bulletin_99_-_briefing_framework_for_primary_school_projects.pdf	This document sets out simple non-statutory area guidelines for primary school buildings. It gives minimum areas for all types of space in primary schools.

100	Fire safety in new and existing school buildings	2014	https://www.gov.uk/government/publications/fire-safety-in-new-and-existing-school-buildings/fire-safety-in-new-and-existing-school-buildings	This document provides detailed design guidance that, if followed, will usually enable the school design to satisfy the requirements B1 – B5 of the Building Regulations.
101	Guidelines on ventilation, thermal comfort and indoor air quality in schools	2016	https://consult.education.gov.uk/capital/bb101-school-design-iaq-comfort-and-ventilation/supporting_documents/DfE%20Ventilation%20guide%20consultation%20draft%2029%2006%202016.pdf	This document provides detailed guidance on how to design schools to achieve the required performance for ventilation indoor air quality and thermal comfort.
102	disabled children and children with SEN	2014	https://www.gov.uk/government/publications/building-bulletin-102-disabled-children-and-children-with-sen	This publication sets out non-statutory guidance on planning and designing accommodation for new and existing schools in England – all of which will have at least some children or young people with SEN and disabilities.
103	Area guidelines for mainstream schools	2014	https://www.gov.uk/government/publications/mainstream-schools-area-guidelines/area-planning-for-maintained-schools	This document sets out non-statutory area guidelines for school buildings (part A) and sites (part B) for all age ranges from 3 to 19. It covers all state schools, including mainstream academies and free schools, except special schools and alternative provision.
104	Area guidelines for SEND and alternative provision	2015	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/485223/BB104.pdf	

School baseline designs

In this section you will find information on baseline designs for schools. These demonstrate good practice that can be achieved within the set cost and area allowances. The details of the baseline designs are set out, together with associated drawings and technical analyses.

- Baseline designs for schools: guidance
- Baseline design: 105 place primary school with a 26 place nursery
- Baseline design: 180 place primary school with a 26 place nursery
- Baseline design: 210 place primary school with a 26 place nursery
- Baseline design: 240 place primary school with a 26 place nursery
- Baseline design: 420 place primary school with 26 place nursery
- Baseline designs: 600 place secondary school
- Baseline designs: 630 place primary school
- Baseline designs: 1,120 place secondary school
- Baseline designs: 1,200 place secondary (practical specialism)
- Baseline designs: 1,200 place secondary (academic specialism)
- Baseline design: finger-block 1,200 place secondary school
- Baseline designs: 1,200 place secondary (music and sports)
- Baseline design: superblock 1,200 place secondary school
- Baseline design: 1,850 place secondary school

Output Specification

Generic Design Brief (with the Technical Annexes) and School Specific Brief (and its annexes) forms the output specification. Together they describe the client's functional requirements that need to be reconciled and accommodated. The Contractor shall satisfy all elements of the Employer's Requirements, including the GDB (with the Technical Annexes), and the SSB. The SSB (and its Annexes) set out additional or alternative requirements to the GDB (and the Technical Annexes). In the event that there is any inconsistency between the GDB (with the Technical Annexes) and the SSB, the GDB (with the Technical Annexes) will take precedence.

- **Generic Design Brief (GDB)**
  The GDB (with the Technical Annexes) sets out the Employer's generic requirements for School Buildings and grounds. Technical Annexes are the suite of documents integral to the GDB which sets out the detailed technical requirements for a school.

- **School Specific Brief (SSB)**
  The SSB (and its Annexes) provides key data for a specific School and sets out any requirements for that School which are additional or alternative to the GDB (and the Technical Annexes).

Buying for Schools

Guidance on how to plan and run an efficient procurement process to buy goods, works or services for your school:

https://www.gov.uk/guidance/buying-for-schools

Schedule of Accommodation (SoA)
An interactive tool to give a schedule of all spaces needed in mainstream school buildings for all age ranges from 3 to 19.
https://www.gov.uk/government/publications/mainstream-schools-schedule-of-accommodation-tools

EFA daylight design guide
Education Funding Agency (EFA) has specified that daylight design in schools should be carried out using climate based daylight design.This guide explains how to carry out the modelling, including using annual weather data to meet the requirements of the EFA contractors framework facilities output specification.
https://www.gov.uk/government/publications/efa-daylight-design-guide

School capital funding allocation guidance
Published 2014, updated 2018. Details of school capital funding allocations for schools.

https://www.gov.uk/government/publications/capital-allocations

ESFA Youtube channel
https://www.youtube.com/channel/UCROOCs9OvIwqFOy5_E0Jtfg/featured

New Schools Network (NSN)

NSN is a charity that
- Campaign to increase the number of good new free school applicants.
- Provide hands-on support to applicants through our Development Programme to make sure the quality of applicants is as strong as possible.
- Support successful applicants through our Delivery Programme as they prepare to open their schools.
- Provide opportunities for open free schools to exchange ideas, information and experiences about what works well and what does not, and to improve the capacity of school trusts as they grow

NSN Resources
The resources in the link below have been developed by New Schools Network to support groups applying to open mainstream primary, secondary and 16-19 free schools. These resources can be filtered by category using the function on the right. NSN claims that it is important that these resources are used in conjunction with the Department for Education's criteria for assessment.
https://www.newschoolsnetwork.org/set-up-a-free-school/resources

SITE & BUILDINGS: Overview Guidance for proposer groups in pre-opening (in publication)

Design Council Commission for Architecture and the Built Environment (CABE)/Design Council

In 2011, Design Council merged with CABE, the government's adviser on design in the built environment. Design Council/CABE is a charity and is recognised as a leading authority on the use of strategic design. Their work include:

- Built environment
- Design training and education
- Product development
- Social innovation
- Research

CABE Resources
This suite of documents include guidance, report and case studies on education buildings.
https://www.designcouncil.org.uk/resources/search/im_field_theme/education-skills-1021

Two examples:
1. Our school building matters: How to use investment in the fabric of your school to inspire learning (2010) Our school building matters is a toolkit for teachers. It will help you make the most of the learning opportunities created by building a new school or refurbishing an existing one. Investment in the fabric of a school provides a unique moment for schools to stimulate teaching and learning. This resource provides a wealth of ideas for exploiting the whole process – from the gleam in a school leader's eye to the time when pupils are using the new or refurbished building. You can also use it to make the most of your existing school environment.
http://www.designcouncil.org.uk/sites/default/files/asset/document/our-school-building-matters.pdf

2. Creating excellent primary schools: A guide for clients (2010)
This guide explains the processes involved in primary schools' building projects and case studies are included to explore good practices related to different stages of a project.
http://www.designcouncil.org.uk/sites/default/files/asset/document/creating-excellent-primary-schools_2.pdf

Royal Institute of British Architects (RIBA)

The Royal Institute of British Architects (RIBA) is a professional body for architects primarily in the United Kingdom, but also internationally, founded for the advancement of architecture under its charter granted in 1837 and Supplemental Charter granted in 1971.

Better Spaces for learning: New RIBA schools report (2016)
https://riba.app.box.com/s/8mf8jzhom73ds97w8hbtb5ah269jlw0w/file/64567876905
This document highlights the value of good design in practice. And recommendations for government's school building programme.

RIBA Plan of Work (2013)
https://www.ribaplanofwork.com/
First developed in 1963, the RIBA Plan of Work is the definitive UK model for the building design and construction process. The Plan of Work now includes this online resource enabling professionals to browse, customise and download a plan of work. It is intuitive to use with on-screen help at each stage.

The Chartered Institution of Building Services Engineers (CIBSE)

The Chartered Institution of Building Services Engineers (CIBSE) is an international professional engineering association based in London that represents building services engineers. It is a full member of the Construction Industry Council, and is consulted by government on matters relating to construction, engineering and sustainability

CIBSE publications
A list of publications from CIBSE is available on this website:
https://www.cibse.org/knowledge/cibse-publications

Three Examples:
1, Integrated school design CIBSE TM57 (2015)
This document focuses on the environmental parameters of successful learning spaces and identify the conflict between the individual design parameters that need our greatest attention. Each chapter of this guide indicates best practice approaches alongside practical feedback from completed projects to help identify the key issues that need to be addressed to create successful learning spaces.
https://www.cibse.org/Knowledge/knowledge-items/detail?id=a0q20000008I7fKAAS

2. Soft Landings for Schools: Case Studies.
The Soft Landings for Schools project was coordinated by the Usable Buildings Trust, and funded by the Technology Strategy Board. It is an open-source framework that is intended to '…smooth the transition into use and to address problems that post-occupancy evaluation show to be widespread'. This document provides case studies of schools that applied the soft landing framework, and key messages coming out of those case studies.
http://www.cibse-sdg.org/publications/soft-landings-for-schools-case-studies

3. Environmental design CIBSE Guide A
CIBSE Guide A: Environmental design is the premier technical/reference source for designers and installers of building services, especially low energy and environmentally sustainable buildings.
https://www.cibse.org/knowledge/knowledge-items/detail?id=a0q20000008I79JAAS

Others

Metric handbook
This Metric Handbook is designed for designers, planners and architects. It includes size of toilets, desks etc. The spacing needed between different sets of furniture, as well as the normal spacing between, for example, a desk and a chair are also given.
http://site.iugaza.edu.ps/uesawi/files/2015/04/The-Metric-Handbook-Architecture-must-have.pdf

2. Literature on the school design process

In recent literature is the increased focus on the participatory design process. As suggested by OECD (2014), there is emerging evidence supporting the claim that participation in designing a space is more likely to motivate teachers to change practices and to refine their teaching. Some conceptual frameworks for participatory design were developed in recent years, for example needs centred design (de Vrieze and Moll, 2016), substantive design principles and procedural design principles (Mäkelä and Helfenstein, 2016). Increasingly, research is also focusing on involving students as co-designers to ensure that they can play a key role in decision that could affect them (Can and Inalhan, 2017; Pearson and Howe, 2017).

Mäkelä, T., & Helfenstein, S. (2016). Developing a conceptual framework for participatory design of psychosocial and physical learning environments. Learning Environments Research, 19(3), 411-440.

Fisher, K. (2016). The translational design of schools : an evidence-based approach to aligning pedagogy and learning environments. Sense Publishers.

de Vrieze, R. and Moll, H. (2016). An analytical perspective on primary school design as architectural synthesis towards the development of needs-centred guidelines. Intelligent Buildings International, pp.1-23.

Pearson & Howe (2017) Pupil participation and playground design: listening and responding to children's views, Educational Psychology in Practice, 33:4, 356-370

Can & İnalhan (2017) Having a voice, having a choice: Children's Participation in Educational Space Design, The Design Journal, 20:sup1, S3238-S3251

Könings, K., Bovill, C. and Woolner, P. (2017). Towards an interdisciplinary model of practice for participatory building design in education. European Journal of Education, 52(3), pp.306-317.

Woolner P. (2018) Collaborative Re-design: Working with School Communities to Understand and Improve Their Learning Environments. In: Ellis R., Goodyear P. (eds) Spaces of Teaching and Learning. Understanding Teaching-Learning Practice. Springer, Singapore

Janssen, F. J., Könings, K. D., & van Merriënboer, J. J. (2017). Participatory educational design: How to improve mutual learning and the quality and usability of the design?. European Journal of Education, 52(3), 268-279.

Casanova, D., Di Napoli, R., & Leijon, M. (2017). Which space? Whose space? An experience in involving students and teachers in space design. Teaching in Higher Education, 1-16.

3. School Design, POE and wider benefits

OECD's (2014) literature review suggests that there is an overall lack of empirical evidence on the indirect effects that specific physical space qualities can have on learning and other outcomes. Since then a large proportion of the post-occupancy evaluation studies has been further developing this evidence base by using more rigorous research methods (Immes and Byers, 2016; Barrett et al, 2017; Lau et al, 2016), focusing on more specific types of outcomes (Brittin et al, 2017; Frerichs et al, 2015; Magzamen et al; 2017), and examining the possible mediators of the relation between school's physical environment and student achievement (Maxwell, 2016; Gilavand and Hosseinpour, 2016; Ariani and Mirdad, 2016). Some previously overlooked aspects were also explored. For example, a research team from the University of Nebraska– Lincoln (UNL) is currently working on establishing how the impacts of conditions in K-12 school buildings on student achievement vary with different demographic factors (Lau et al, 2016).

School Design and pedagogy, school improvement, educational effectiveness and wider benefits.

Imms, W. and Byers, T. (2016). Impact of classroom design on teacher pedagogy and student engagement and performance in mathematics. Learning Environments Research, 20(1), pp.139-152.

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Magzamen, S., Mayer, A. P., Barr, S., Bohren, L., Dunbar, B., Manning, D., ... & Cross, J. E. (2017). A Multidisciplinary Research Framework on Green Schools: Infrastructure, Social Environment, Occupant Health, and Performance. Journal of School Health, 87(5), 376-387.

Maxwell, L. E. (2016). School building condition, social climate, student attendance and academic achievement: A mediation model. Journal of Environmental Psychology, 46, 206-216.

Gilavand, A., & Hosseinpour, M. (2016). Investigating the Impact of educational spaces painted on learning and educational achievement of elementary students in Ahvaz, southwest of Iran. International Journal of Pediatrics, 4(2), 1387-1396.

Ariani, M. G., & Mirdad, F. (2016). The Effect of School Design on Student Performance. Interna-

Literature on Post Occupancy evaluation (POE)

Department for Education and Skills and the Construction Industry Council (2014). DQI for Education: Guidance [online] Available at: http://www.dqi.org.uk/perch/resources/dqi-schools-guidance-copy.pdf

The DQI for Schools is a tool which provides a framework for the ongoing evaluation for the school design. The DQI process is linked to all 5 phases of a building project – Briefing, Concept Design, Detailed Design, Ready for Occupation, and In-use.

Sanoff, H. (2001), School Building Assessment Methods, National Clearinghouse for Educational Facilities, Washington, DC.

BREEAM, Design and assessment methods for sustainable buildings, http://www.breeam.org, accessed 21 May 2018.

Wolff, S. (2003), Design Features of the Physical Learning Environment: For Collaborative, Project-Based Learning at The Community College Level, National Research Center for Career and Technical Education, University of Minnesota, United States.

OECD (2009b), International Pilot Study on the Evaluation of Quality in Educational Spaces: User Manual, available at
http://www.oecd.org/education/country-studies/evaluatingqualityineducationalfacilities.htm.

Imms, W., Cleveland, B. and Fisher, K. (2016). Evaluating Learning Environments.

08. Glossary
(Examples)

Free Schools
Free schools are funded by the government but aren't run by the local council. They have more control over how they do things.They're 'all-ability' schools, so can't use academic selection processes like a grammar school. Free schools can set their own pay and conditions for staff and change the length of school terms and the school day. They don't have to follow the national curriculum. Over 680 free schools are now open or approved in every region of England. Once full these schools will provide over 400,000 new school places.
https://www.gov.uk/types-of-school/free-schools

Priority School Building Programme (PSBP)
The £4.4 billion Priority School Building Programme (PSBP) is rebuilding and refurbishing school buildings in the worst condition across the country.
https://www.gov.uk/government/publications/psbp-overview/priority-school-building-programme-overview

Building Schools for the Future (BSF)
BSF is the program from 2004 – 2010 where government investment in improving school buildings. The stated target is to achieve educational buildings that inspire new ways of learning and to provide 'excellent' facilities that benefit the whole community. This is to be achieved by rebuilding or refurbishing every secondary school in England over a period of 10–15 years. Over 1004 schools benefi ted from BSF investment. It was replaced with the Priority School Building Programme (PSBP)
http://webarchive.nationalarchives.gov.uk/20111122053934/https://www.education.gov.uk/publications/eOrderingDownload/DfES%200218%20200MIG467.pdf

Brief (outline or detailed)
The outline brief is an initial description of the client's goals and requirements. The detailed brief is a development of this with input from users and the design team.

Build quality
Build quality relates to the performance of the engineering systems and construction, including structural stability, safety

Post Occupancy Evaluation (POE)
POE is the process of obtaining feedback on a building's performance in use.

Procurement
Procurement is the whole process by which the building and related services are developed and purchased.