

Our school building matters

How to use investment in the fabric of your school to inspire learning



Specialist Schools
and Academies Trust
THE SCHOOLS NETWORK™



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Foreword

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.

The teaching activities are organised in five stages: getting started, looking closely, development and design, construction and moving in. On the way schools will encounter a crash course in architecture and a range of other original activities that respect the creativity of teachers as well as providing some stimulating material directly linked to the curriculum. These will lead to memorable learning whatever the kind of school or the extent of change.

Our school building matters draws on expertise from both CABE and our partner the Specialist Schools and Academies Trust (SSAT). It has also been endorsed by National Primary Headteachers (NPH). We hope it inspires you.

Richard Simmons
Chief executive
CABE

Elizabeth Reid
Chief executive
SSAT

Peter Price
National chair
NPH

Using the kit

Be creative and interchange ideas from the five sections to suit your own needs. Some ideas can be sustained and developed throughout the lifetime of your build project. It is therefore worth reading through the full kit, even if you think only one section is relevant to the stage you are at. There are examples and case studies throughout to inspire you on your journey.

The kit and linked resources aim to support you in developing exciting learning experiences.

Your pupils will develop their personal, learning and thinking skills and most activities have a suggested age range and associated subject links. Some activities can be easily contained in an afternoon lesson, while others can be delivered as a term project. The activities are not presented as lesson plans, so some preparation will be needed to differentiate and resource them.

To help plan the teaching and learning aspects as a whole school, the toolkit should be introduced to teachers collectively (in an INSET session if possible) and staff should be encouraged to adapt the ideas and create new activities. Ideally, the activities should be mapped to the timeline of your build programme to create a strategy for pupils and staff to have a voice and impact on their school's future environment.

Key

 Suitable for key stage 1, 2, 3 & 4



Sustainability activity

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Getting started

Whole school and longer-term activities

Getting started

Looking closely

Development
and design

Construction

Moving in

Visioning day

It is very important to involve all staff and pupils as early as possible in thinking about their future school. At the beginning of the journey you could run a 'visioning day' to launch the project and involve the whole school in the process. Take ideas from the early sections of the kit and combine whole-school and subject-specific activities. A combination of standalone activities and those which kick start longer-term processes would be ideal. This is an example of how a visioning day could look:



© Alys Tomlinson



9.00am The headteacher welcomes pupils into an assembly themed around the school building process. Opening with a short video from YouTube explaining the government scheme, she explains the aims of the project and how the pupils' input will be crucial. Guest speakers are invited to share their vision for the building. To get the pupils thinking about their opinions a small group talk about their favourite and least favourite spaces in the school, and their favourite buildings or places.



10.15am One class (in a geography lesson) is using a map of the school to conduct an audit of the building, colour coding areas to identify whether they like or dislike them, then thinking about how places could be improved. Across the corridor in maths, another class has measured the playground and is creating a scale drawing of the outdoor space to help them understand how it could be developed to encourage all pupils to use it.



11.35am Throughout the morning, pupils consider issues surrounding the school building process. In history, pupils begin a research project into the history of their school by interviewing past pupils who have been invited in (some recent, some from 20 plus years ago). In English, pupils prepare a presentation on their favourite building, which will form part of their assessment for speaking and listening.



1.00pm A focus group of pupils has volunteered to consider the 'hot topic' of the canteen, identified by the student council as the most unpopular area of the current school. The pupils interview their peers to get ideas about how it could be improved and make models from card and other materials gathered from around the school. Other pupils are imagining their perfect school using ICT, drawing, modelling and writing.



2.00pm In the afternoon some music and drama pupils visit a nearby recently completed school specialising in the performing arts to see how the specialism has influenced the building design. Meanwhile another group of pupils creates a giant mood board in the school's foyer as part of their PSHE lesson. All pupils will be able to pin up thoughts and images on to the board to share their ideas for the building and grounds.



3.15pm At the end of the day, pupils write a wish for their future school building on paper bricks. As they leave, they stick these into a giant wall to be displayed in the hall, allowing all partners in the project to see the pupils' initial thoughts. Parents and wider members of the community should be invited in to find out more about the proposed new build and to leave their own wishes on paper bricks. Paper bricks can be downloaded from: www.cabeurl.com/7t

Longer term

As well as drawing on some of the curriculum-linked activities featured in the 'looking closely' section, you can use your visioning day to kick start some longer-term engagement activities. If you are a secondary school, consider working with your feeder primary schools on these.

Design champions

The whole school should be involved in the new school design process wherever possible. However there will be times when this is not feasible. Establishing pupil design champions (or whatever name you or they choose) is a good way to deal with situations when only small groups can be involved, for example when interviewing architects or visiting their offices. You could work with:

- the school council
- gifted and talented pupils
- hard-to-reach pupils
- enthusiastic pupils who nominate themselves at the end of the visioning day.

Think about having sub-groups, such as a group to focus on the development of the grounds. Try to find ways to accredit the pupils' involvement for example through the Arts Award: www.artsaward.org.uk. Pupil champion groups should feed in ideas from, and report back to, their class or peer group – they could make a video diary to share with others.

Sharing ideas

A variety of virtual forums and physical spaces should be set up for pupils (and staff) to share ideas throughout the building's design cycle. Ask architects to donate magazines and material samples and be inspired by the Tate's Mod Blog: modblog.tate.org.uk Start creating:

- a giant mood board space
- individual mood boards
- a school treasure box
- an online message board.

The giant mood board space should be a working space, similar to those you find in design studios, where pupils can pin up images, draw and write down ideas. Younger pupils can store pictures of buildings and places they like within a treasure box.

Developing a brief

The design brief is extremely important in any build process and the senior management team and the local authority should enable pupils to have a voice in the brief. If collated, the work produced by pupils within the early sections of the kit can help shape the brief. Pupils could explore particular themes:

- storage
- toilets
- sports facilities
- social spaces and common rooms
- graphics and colours.

Pupils could work with architecture and design students from local universities or colleges. The students should inspire pupils to think outside the realms of their direct experience and support them to refine their ideas which could be expressed in writing, drawing or modelling. Take inspiration from the Sorrell Foundation and if possible work with the foundation to explore these themes in greater detail: www.thesorrellfoundation.com



Design review

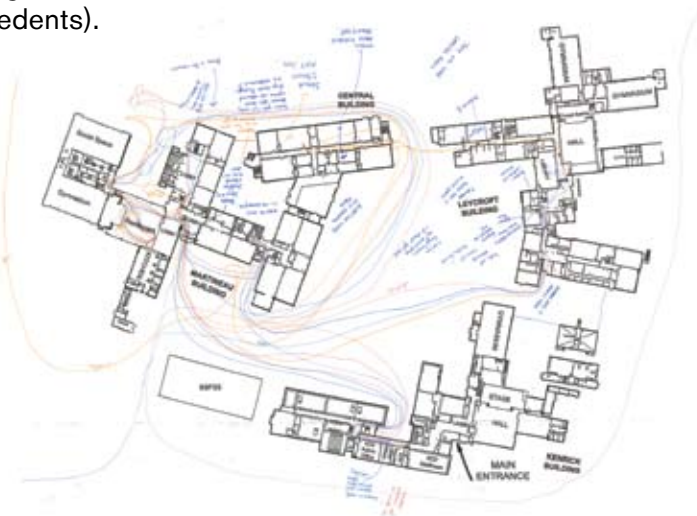
At key points throughout the design process, there will be opportunities to review the latest design stages. It will help staff and pupils if they begin to get a sense of the types of drawings and models used by architects to communicate their designs:

- concept sketches
- technical drawings – plans, sections, elevations
- 3D card models
- visuals generated via computer aided design (CAD).

The project architects can help this process by drawing diagrams of the building on large sheets of paper, showing 3D models and virtual 'fly-throughs' and sharing their image references (precedents).

'At the start of our Building Schools for the Future (BSF) engagement work in Birmingham, we prepared two large scale plans of the school and asked the school council and teachers to draw their routes through on a typical day. Very quickly a pattern of the main circulation routes through the school emerged. The exercise helped pupils develop their spatial awareness and articulate what worked and what didn't work in the existing layout. We were able to use this information to develop a strategy for the refurbishment.'

Charlotte Luther
Architect, FAT 'Fashion Architecture Taste'



Young expert clients

Pupils and teachers from six schools (four secondary, two special) in Bridgwater, Somerset, became expert clients in the early stages of the design of their new school. Through a series of workshops and visits to exciting public spaces and a newly designed school they learned about:

- contemporary school design
- sustainability
- public art.

The programme was devised to equip the expert client group with design knowledge and design literacy skills before the preferred bidder was selected. The group presented its priorities for their new school buildings to key local authority staff and the competing bidding teams.



They reviewed the proposed schemes of the sample schools and worked with the design teams.

This example is part of our partnership work with the Real Ideas Organisation (RIO) to support schools in the South West to develop groups of young expert clients. Pupils, teachers and parents from co-locating primary, secondary and special schools in south Bristol have taken part in a similar series of workshops. The pupils shared the successes and failures of their existing school buildings and worked with a landscape architect to evaluate their school grounds and make recommendations for the new landscaped areas.

The aim of these projects has been to generate pupil/school voice at a stage where the school can influence key design decisions: www.architecturecentre.co.uk/school-design

Amy Harrison
Education manager
The Architecture Centre, Bristol



Looking closely

Understanding your current school building

Looking closely

Development and design

Construction

Moving in

Our school

Story

KS2 KS3

Learning objective:

Pupils will be aware of the social and historical context of their current school building

Key subject links:

History, drama

Every school has an interesting history and story to tell. Encourage pupils to understand the motivations, style and politics of the time when it was originally designed and built. Research online, at your local library and by inviting past pupils to participate in an intergenerational learning activity. Ask pupils to imagine the lifestyle and the reasons behind the building – whether it is a Victorian brick and ceramic tile building or a glass and steel structure from the 1960s. How would it have been used? What would lessons have been like when it first opened? How would it have originally looked and felt? Pupils could put on a play about the era and the building of the school or identify other buildings and key events in the local area from the same period.

Identity

KS1 KS2 KS3 KS4

Learning objective:

Pupils will have considered and communicated the current identity of their school

Key subject links:

English, citizenship, art, ICT

Ask pupils to brainstorm words that describe the school. Use the activity to extend their vocabulary and introduce creative writing tasks. Ask them to consider how they, and then the wider community, perceive the school. This can be about both the school's reputation and its physical presence. For example, is it a vibrant place, known for being good at sport? Is the building a landmark or blot on the landscape? Pupils could find out how many countries pupils at school come from and explore the identity and architectural styles of those countries. They could write a creative piece describing their school to a new pupil or visitor, and explore and even re-write the school's motto. The activity could be extended in art and ICT, presenting ideas and opinions visually using drawing, collage, film and photography.

Building

KS1 KS2 KS3

Learning objective:

Pupils will have a greater understanding of the quality of spaces in their school building

Key subject links:

Geography, maths

Engage pupils in considering their individual and collective opinion of the current school building. Start by giving them a range of statements about school design, for example 'A school should have lots of windows', 'Every student should have their own locker', 'A school should have wide corridors', which they have to rank in order of their priorities. Next, go on a tour of the building and provide pupils with a set of three 'traffic light' cards to rate the spaces – green for places they like, amber for ok, red for dislike. To support map reading skills, pupils could be given plans of the building to colour code or to map their daily use of the building onto. To support analytical skills, charts of the results could be created to show how pupils across the school rated the spaces. Attach reasons to the results. The activity could be concluded by asking, 'What is your favourite part of the building and why?' The 'why' also encourages pupils to think about their priorities for a new building.

Grounds

KS1 KS2 KS3

Learning objective:

Pupils will have considered how their school grounds are currently used and how much space is available

Key subject links:

English, maths, PSHE

Pupils should look closely at how their school grounds work to develop a sense of place. They could take and annotate photos of the variety of spaces there, for example, sports fields, playgrounds, nature areas. Ask the pupils to come up with a list of activities (such as learning, eating, playing sport, resting, socialising, chatting, playing games, performing) and where they take place outdoors at school. How do those spaces make them feel? They could write poems, devise a questionnaire, record different sounds they hear, write words in chalk on the playground. Using measuring sticks counting paces or using string pupils can measure the different outside spaces, draw them to scale and calculate the areas. They can then compare the area of each and consider whether the facilities they have are sufficient for the activities they do, and wish to do.

Crash course in architecture

The built environment

KS1 KS2 KS3 KS4

Learning objective:

Pupils will be inspired by buildings and places and have experience of a range of architectural styles

Key subject links:

Art, DT

To help pupils access the language of architecture, it is useful to open their eyes to different local and global architectural spaces and styles. Armed with sketchbooks and cameras, pupils should explore their local area. Encourage them to look around (and to look up) and record building materials and details. Discuss the differences between various types of architecture, for example a church and a supermarket. Explore materials, size, shape, pattern, age and their feelings and reactions to buildings and places. Consider local landmarks and green spaces, too. CABE's teaching resources, such as *Our street*, will support you with this and can be downloaded from: www.cabe.org.uk/teachingresources

Back in school, invite young people to explore and debate aesthetics. Show a range of buildings and ask:

- Who do you think designed it?
- Where do you think it is?
- What is it used for?
- How would it fit in our local area?

Collage is an effective way to further the discussion about character and combination of architectural style – sketches can be photocopied, photographs scanned and manipulated to create new streetscapes, examples of new architecture and historic buildings can be combined. Images of buildings of different ages can be downloaded from: www.cabeurl.com/8v

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Site analysis

KS2 KS3 KS4

Learning objective:

Pupils will have improved skills in interpreting plans and will understand that buildings must respond to their site

Key subject link:

Geography

Architects start a project by analysing a site – the practical conditions of the location and also the site's sense of place. Build up a collection of maps and site plans of your local area – use Google Earth and contact your local authority to obtain these. Pupils can use the maps to make a series of studies, identifying landmarks, places they know, green spaces and proximity of the school to local services such as libraries. Ask pupils what does and does not work about the current school site – for homework, pupils could photograph key points on their walk to school and discuss the impact of the school site as they arrive. They can think about transport connections to the site and investigate the sunpath, rainfall and soil conditions. Architects do all this to maximise light, views and space on site and so that the new building relates well to neighbouring buildings and spaces. It may be that your school is being re-located to a new site and pupils could research the reasons for this.

Case studies

KS2 KS3 KS4

Learning objective:

Pupils will have developed their opinions on school building design and practised presentation and debating skills

Key subject link:

English

Ask pupils to research case studies of schools at www.cabe.org.uk/case-studies and www.imagine schooldesign.org. In small groups, ask them to choose one school they feel works well. Challenge them to give a presentation on this building highlighting the main points and why they have chosen it. Hold a class debate about the positives and negatives of the different schools. At the end pupils could vote on their favourite and summarise what as a class they feel works well. This could be drawn together into a wish list for their new school. Older pupils could also research and write up a building they like into a case study for reference by other pupils at the school.

Inspirational visits

KS2 KS3 KS4

Learning objective:

Pupils will have a greater understanding of specific inspirational buildings and the design process which created them

Key subject links:

DT, citizenship

There are many interesting local public buildings and spaces that offer inspiring learning opportunities. You could visit local art galleries, concert halls, libraries, restaurants and sports centres. Private buildings such as offices and science labs may also open their doors to school groups – your local authority or local architecture centre may be able to help you organise a visit. If possible, gather the sketches, technical drawings (plans, sections and elevations), models and computer aided renders to help pupils unpick the design process. Remember to include sustainable buildings in your list and download the teaching resource *How places work* from CABE's website to help you.

To assess the quality of school buildings, establish opportunities for groups of staff and pupils to visit other new schools in your area. This may take some organising but is worthwhile as the depth of insight it offers is invaluable. While on a visit, pupils can take photos of the places they like, feel comfortable in, are excited by. If you are part of a co-location project, pupils from the different schools should go on a guided tour of each others' buildings before going together to be inspired by a new school. Where possible, it should be arranged for the visiting pupils to meet and share ideas with pupils from the school being visited. This happened as part of Sittingbourne Community College's BSF design think tank project (supported through a CABE education grant) and pupils gained useful insights and also built their communication skills and confidence: www.cabeurl.com/91



The *Design quality indicators for schools question cards (DQIFs)* developed by Kent Architecture Centre are useful for pupils to analyse school buildings – both their own and those they visit. They can be downloaded from: www.architecturecentre.org/publications

Planning for change

Future learning

Staff KS2 KS3 KS4

Learning objective:

Staff and pupils will have considered how teaching and learning will look in the future

Key subject links:

Citizenship, PSHE

Use the opportunity of a new school building project to include pupils in discussions about your school's educational vision. *Thinking space*, a resource by CAFE, Futurelab and Portsmouth City Council, is designed to prompt ideas from staff and pupils and is available from www.cabeurl.com/a5. The *Vision mapper* resource will also be useful: www.visionmapper.org.uk

Start by inviting pupils to compare how they learn in school to what happened in Victorian times. Next ask them to close their eyes and visualise what learning might look and feel like in the future – what subjects, tools and places will be involved? Ask them to describe and draw these. Staff and pupils should also collaborate on visioning how teaching and learning could be

organised in the future – the school's mission statement would be a good starting point for discussion. Pupils could consider the range of activities (sports, performing arts) they may like to take part in and the specialist spaces they would need for these. How flexible could a future school be? Pupils could interview teachers across the school and collate ideas. A blog or intranet space could be set up to share thoughts and an extended staff meeting would also be helpful to get staff, including support staff, involved.

'I would like a room where you can work in peace'

Year 4 pupil

Learning spaces

KS2 KS3

Learning objective:

Pupils will be able to express opinions on different types and arrangements of learning spaces

Key subject links:

Art, DT, ICT

To help pupils re-think learning spaces and how they might look and feel, be brave and empty your classroom completely. Alternatively use an empty classroom at school or turn one classroom space into a 'design laboratory' for pupils. They can see how much space they really have and consider how they might arrange the space for different types of learning (bringing chairs back in as needed).

Alongside this activity you could draw the outline of a classroom on the playground with chalk and pupils could fill in the furniture. You might use a selection of art materials, such as rolls of coloured cellophane, for pupils to explore how colour and decoration affects the mood of the space.

Discuss the limits of a classroom space and propose new spaces for learning. Make use of interactive software to do this – dragging and dropping pictures of various classroom furniture and equipment to explore how learning could look. Challenge pupils to imagine new learning spaces that are not restricted to classrooms – they could draw ideas and develop designs in card models and by using Google SketchUp.

'As part of their DT curriculum, I gave my year 8 pupils a brief to research, design and model a DT classroom/workshop for their new school provided through BSF. Pupils were asked to consider classroom size and layout, furniture, décor and equipment. To test ideas, they measured and marked out their classrooms with masking tape on the playground, produced plans and card models to scale and evaluated what they felt were the most successful designs. They were learning a wide range of skills while engaged in a real life project that directly affects their future – the level of work produced has really surprised me.'

Daniel McDonagh
Teacher of DT, St Ambrose Barlow RC High School, Salford

New technology

KS2 KS3 KS4

Learning objective:

Pupils will have considered the role and impact of technology in their future school

Key subject link:
ICT

Start by discussing pupils' favourite technologies and how they like to learn. Next, to help inform the school's ICT brief, pupils could be challenged to write a report on how they would like to use new technologies in their future school. Prompt the activity with questions such as, 'How will technology change the roles of teachers and pupils?' and invite pupils to design and take part in lessons using a range of new technologies, for example mobile phones. The report could be created by video and podcasting to share via the school's Learning Platform or e-portfolio.

In collaboration with the school's ICT provider, engage pupils in workshops about the new technologies that are available and appropriate for your school. Staff and pupils should plan how they will use and manage any new technologies to be incorporated. The ICT quality indicators developed by Becta in partnership with Partnerships for Schools, could also be used to stimulate debate with the wider school community: www.cabeurl.com/8w

ICT tools, such as the Create-A-Scape mediascape tool www.createascape.org.uk and Google SketchUp are useful for recording and visioning the school environment.

At Ian Ramsey School in Stockton, 250 year 8 pupils participated in a day long Google SketchUp workshop as part of a BSF inspired project linked to the ICT curriculum. The use of a basic CAD system allowed pupils to explore their ideas further by quickly transferring 2D drawings to 3D. Funded by Creative Partnerships, the project was developed by Northern Architecture to engage pupils in their school's design journey.



Sustainability

KS1 KS2 KS3 KS4

Learning objective:

Pupils will have a greater understanding of how their school uses energy and how behaviour can impact on the sustainability of a building

Key subject links:
Science, maths

There is an aspiration for all new schools to be zero-carbon by 2016 and sustainability should be considered throughout a new build or refurbishment project (there are activities on this theme throughout this kit). As a starting point, you should download CABE's *Green Day activity kit*: www.cabe.org.uk/greenday

This is packed with great ideas on how pupils can consider the impact the school has on the environment. Pupils should conduct an energy audit of their current school and look at where and how energy is lost. For example, are there places where lights are on when the daylight is strong enough? If pupils collect data in advance they can then calculate their own, and the school's, carbon footprint using the *Carbon detectives' kit*: www.carbondetectives.org.uk To extend this activity for older pupils, ask them to research renewable energies and present ideas on the future of sustainable energy supply and use in their neighbourhood. They could also research the term zero-carbon and debate if their school could achieve this status by 2016.

Using this toolkit

Some of the activities in this kit have been tried by Bure Valley School in Aylsham, Norfolk. Headteacher John Starling had previously involved staff, governors and parents in generating a new vision for learning as part of their Primary Capital Programme (PCP). He was now looking for ways to engage the pupils.

Before introducing the project to teachers, the head selected activities that suited the age range of pupils (years 3-6). Teachers were then asked to deliver three of the activities with their class over three two-hour lessons.

Mr Starling created a quick template with each activity outlined (including a learning objective) and asked staff to complete the template with a more structured lesson plan. Teachers were given the flexibility to adapt the activities to suit their classes and to work out when they would integrate the lessons into their timetable over a two-week period.

As part of their crash course in architecture, the year 6 classes explored the local built environment. Linked to their studies of the Victorians (part of the history curriculum), the pupils went out and about to investigate the architectural character and building materials of Aylsham, a Victorian market town. Back in class, the teacher led a discussion based on a series of images of modern architecture, including a Frank Gehry building, projected on to the whiteboard.

The teacher asked pupils what they liked and did not like, what they felt about features, shapes and styles, and what effect changing the materials would have. All the pupils had an opinion, especially when the discussion developed to include whether contemporary design would be appropriate for Aylsham.

Mr Starling also took some ideas from the visioning day and gave time to whole-school activities – creating a mood board for spaces and colours, making a wish wall of paper bricks, and designing an ideal classroom.

These were mounted on free-standing movable boards so they could be used in assemblies and meetings, but also be easily tidied away. The school is due to meet with its architects and plans to use the boards as a conversation point for sharing the pupils' ideas.

The school has selected four design champions to help collate this work and feed back to the architects.

The school council (12 pupils) will look at developing a brief in more detail and a virtual discussion forum has been set up. If you would like to follow Bure Valley's project, see images of the pupils' work, and download lesson plans, templates and worksheets created by the school please visit the 'new build' section of the school's website: www.burevalleyschool.org.uk

'I noticed the pupils developing an increased awareness and sense of ownership'
John Starling





Development and design

Having a say on design decisions

Factors to consider

The community

KS2 KS3 KS4

Learning objective:

Pupils will have developed their ability to engage and communicate with their local community

Key subject links:

English, citizenship, geography

As part of your extended services plans ask pupils to inform and consult their local community on how they might like to use the new building. Organise competitions for pupils to create leaflets, questionnaires and newsletters to go home and to send out to the wider community. Run fieldwork projects in which pupils gather opinions from local businesses and shoppers on your local high street. And why not set up some exciting family learning opportunities – parents and carers could come in to school to see the pupils' work and take part in visioning activities set up and demonstrated by the pupils.

Alternatively, learners of all ages could participate in a collective junk modelling session. Adult learners (non parents/carers) coming into the school could also have the opportunity to leave their own “wish on a brick”.



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Accessibility

KS2 KS3 KS4

Learning objective:

Pupils will have developed their understanding of the different needs of individuals using their school building and familiarised themselves with design solutions

Key subject links:

PSHE, DT

Spaces in the new building will need to be accessible to all users. Pupils should research different users' needs and consider the building's entrance, circulation, lighting, surfaces, colours and acoustics. For background information, download CABE's *Inclusion by design* publication. Start by watching the YouTube clip about Willows School in Wolverhampton: www.cabeurl.com/8x. Then ask pupils to make a charter of rights and responsibilities for use of the new school building.

Handled sensitively, pupils could role play various needs. Working in pairs, one pupil could be blindfolded and the other their guide, one wearing earplugs, one on crutches.

They could lead each other around the existing school site conducting an audit of places that were difficult for them and then see how these issues have been addressed in the new school plans. They could also try out small samples of building materials designed to help those with impairments, for example raised surfaces and ramps, to see how these make life easier. Again, this could lead to an examination of the proposals to see how these have been used.

To extend the learning, present pupils with a problem, for instance 'at present the science block is inaccessible for those in wheelchairs'. Pupils then have to think of as many different solutions to the problem as they can. They would need to consider desk heights and how equipment is used. Design solutions could be worked up into drawings and models and prizes awarded. The design team could also be involved in helping pupils examine real architectural solutions and refine their ideas.

Feeling safe

KS2 KS3 KS4

Learning objective:

Pupils will have developed their opinions on future security issues by considering a range of people's views

Key subject links:

English, PSHE, citizenship

Pupils should have the opportunity to explore what feeling safe would mean in a future school. Start by asking pupils where they feel safe in their school and wider community – they could take photographs or make drawings of those places. You could share this work with the police (architectural liaison officers), governors and other community representatives. Next invite pupils to review newspaper articles and other material on the topic of security, for instance ID cards. Encourage pupils to think deeply about the positive and negative effects. Approaches to safety in other countries could be compared. Hold debates on options for a future school and how safe they would make pupils feel.

Pupils could make the case for and against these security measures:

- CCTV
- swipe cards
- metal detectors
- boundaries (fences, gates etc).

To explore some of the impacts further, you might like to use the nD game, an ICT tool which introduces pupils to decision making on factors such as safety (including fire), accessibility and cost, through the design of an ideal school:

www.cabeurl.com/6y



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Cost

KS2 KS3 KS4

Learning objective:

Pupils will have a better understanding of the constraints imposed by working within a budget and will have started to consider their priorities within a project

Key subject links:

Maths, PSHE

In order for pupils to understand the complex budget management that is required in any new school build or refurbishment, pupils could be given a budget and in groups asked to think about the cost of interior fixtures and fittings. Various aspects of the interior, for example furniture, paint, blinds, curtains, flooring and lights could be written on cards with different prices allocated to different products. This task will increase their economic awareness and understanding of the cost of buildings. Alternatively, this activity could be pitched by considering the total cost of the whole school project and per part of the build.

'I would like a school that is spacious'

Year 4 pupil

At Thomas Hepburn Community School in Gateshead, Carillion plc gave pupils a fictional budget of £11 million with a swimming pool cost of £5 million. This proved problematic when some pupils wanted two pools!

You could also look at the price of steel – this is always changing and can alter a project's structural solution too. Quantity surveyors and project managers would be good people to help with this task. You should consider giving the school council real authority over an actual cost associated with the build. To help set this up you could reference young mayor projects in which elected young mayors and their young advisors have a budget to spend: www.ymn.org.uk

Detailed design

Exterior

KS2 KS3 KS4

Learning objective:

Pupils will be better able to express ideas about the external appearance of the building and how the interior and exterior function together

Key subject links:

DT, art, science, geography

First invite pupils to research the palette of materials chosen by architects. This could be done by reviewing buildings featured in CABE case studies (www.cabe.org.uk/casestudies) in architectural books in your library, in architectural magazines or by looking at material samples (ask your local practices and building firms if they can donate these). Pupils could also go out and about in their local area and take close-up photos of different materials. A collage or photomontage could be made, so pupils can begin to make aesthetic judgments about what looks attractive and what messages a building's appearance sends out.

Build on the identity work by asking them to brainstorm what new school identity they would like to create. For example, pupils could draw what they think a friendly building looks like.

Pupils should then find out what the project architects are proposing and their thoughts behind the choice of materials and how the building will appear. There could be workshops with the architects to explore the elevation designs, doors and windows:

- does the design maximise views out from the building?
- are there enough places to access the outside spaces?
- how will the materials weather – will they look different in a few years?
- how will the building be naturally ventilated?
- will the daylight levels be right for the function of the rooms?
- what will the building feel like at street level?
- will the entrance be obvious and welcoming?
- does the car park or school boundary hide the building?

Interiors

KS1 KS2 KS3 KS4

Learning objective:

Pupils will have considered their opinion of what makes a good school interior and the link with issues such as accessibility

Key subject links:

Art, DT

There are many aspects of the interior design of the new school for pupils to explore. Signage and graphic communication would be one area (linked to clear way-finding around school); lighting and furniture specification would be another. Pupils could focus on a certain part of the build, for example the dining hall or the reception. They could reflect back on the work they did on identity and be set a brief based on some of that work. For example, they could be asked to consider new ways to make the building feel welcoming and accessible to speakers of different languages. With SEN pupils, the sensory nature of interiors should also be explored. Ideas for colours, texture and sound could be tested by introducing a range of lights, music and materials.

Pupils should reference inspirational images of interiors from many different types of building. To support them in this process, pupils could work with design students from nearby universities. To help them to refine their ideas, proposals should be reviewed by peers in small groups (a critique or 'crit'). Discussions on form and function should be included as pupils start to make 3D card and computer models (Google SketchUp will be useful). Any ideas pupils have should feed into what is happening with their new school build – pupils could even work directly with the companies responsible for delivering the interiors, furniture and other fixtures and fittings.



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'63% of the whole schools estate is land rather than buildings'

Designing school grounds – DCSF 2006

Outside spaces

KS1 KS2 KS3 KS4

Learning objective:

Pupils will better understand the role of outside space in creating a positive school environment and have developed ideas for making successful outside spaces

Key subject links:

Art, DT

Outside spaces offer great opportunities and young people have a strong sense of how they would like them to be used. They are also spaces where budgets often get cut or adults make assumptions about how young people like to use them. All ideas should be collated to support both the brief and the detailed development, and ideally pupils should work collaboratively with the landscape architects. Pupils could take photos of spaces (such as play spaces) they like in their local area to help communicate how they would like their school spaces to be shaped.

In art and DT lessons pupils could develop their design ideas through models and drawings. To help structure this process, they could group ideas under the headings: learning, exercise, social and dining. What kind of structures and areas will they need? Where will they study, play, climb, be quiet, eat, gossip, grow plants? Pupils could also work on site to develop proposals for how the space could be used – mark out areas with string and chalk, arrange chairs and props, and build life-size structures from scrap materials.

'I enjoyed working with pupils from different years'

Year 8 pupil

The *Spaceshaper 9-14* toolkit will be a useful guide in this process. It is designed to engage young people in improving their public spaces, including school grounds projects, through facilitated sessions:
www.cabeurl.com/8y





Sustainable design

KS2 KS3 KS4

Learning objective:

Pupils will have a greater understanding of the links between design features and sustainability

Key subject links:

Science, geography

Pupils should start by thinking of all the ways a building uses energy (referring back to their energy audit) and brainstorming what they think a 'sustainable building' is. Next, set the pupils a research project on sustainable buildings and ask them to give a presentation on the range of eco features (such as rainwater harvesting, solar panels, wind turbines or improved insulation) incorporated in buildings. Set activities for the pupils to explore how features such as insulation and green roofs work.

Next, make the link to school buildings and ask pupils to research schools which have strong sustainability credentials such as:

- Bideford College, Devon:
www.bideford.devon.sch.uk/newschool
- Highbury Grove School, London:
www.highburygrove.islington.sch.uk
- Bowbridge Primary School, Nottinghamshire:
www.bowbridgeprimary.com/newbuild.asp

Find out what is being proposed with your new school building. What is the school's sustainability strategy and what eco features are being proposed? Pupils should highlight the similarities to and differences from the case studies they have researched. Where possible visit a local building with eco features to see how they work in action. Pupils could then make a wish list of features they think should be incorporated in their building and have the opportunity to present and discuss these with the architects and engineers.

Working with architects

As part of the Royal Institute of British Architects (RIBA Trust) Architects in Residence programme, Avanti Architects worked with year 3 pupils from Kidbrooke Park Primary School in Greenwich. Over five sessions, we as architects aimed to support pupils in exploring both the woodland area of their school grounds and the process of what it is to be an architect.

To begin, we showed inspirational images illustrating architecture and what an architect does. The pupils were then given a treasure hunt and photography task within the school grounds. For homework, they had to describe their school to an alien – this made the discussion much more fun and a lot more revealing. Later the pupils collectively surveyed the woodland using a standard unit made from string. The unit was decided by taking the average height of the class – they could relate to this as it provided an intuitive connection to how big things were. This led on to pupils drawing a site plan and making a site model to scale, plotting the trees accurately.



© Avanti/Thompson/Severmann

They had to think about what they liked and disliked about the site and they used umbrellas (actual umbrellas and cocktail stick ones) to help them think about how they would improve the area. We then collated and developed their design ideas to help the pupils respond further as to what they would like to see built.

By working with the teachers, we made this project cross-curricular with strong links to English, maths and DT. Whilst it was not part of a school rebuild or refurbishment process, we think it demonstrates that if architects are tasked with a consultation activity they can create very engaging learning experiences for pupils as well as gaining ideas to inform their work: www.cabeurl.com/8z

Alan Thompson and Henning Severmann



**Safety helmets
must be worn
on this site**

Construction

Making the most of learning opportunities on campus

Be inspired



Learning objective:

Pupils will better understand that the construction process involves many differently skilled individuals and have a greater understanding of the range of construction related career opportunities

Key subject links:

PSHE, construction

As well as making links with architects early in the process, optimise access to the range of built environment professionals and trades involved in the new build. Invite construction companies, surveyors and engineers to deliver activities about their professions. These activities could be run as part of a careers day or design technology week. A lot of these professionals will have great ideas and enthusiasm, but to ensure the level, pitch and timing of the activities is right ensure teachers plan with them (this is good CPD for both parties).

Alongside activities in school, many companies offer work experience (in their offices and on building sites), apprenticeships and support for pupils including those on the diploma in construction and the built environment (C&BE).

Activities could be related to the school build programme – for example engineers and builders could set a challenge about a certain structure or part of the new build (a roof or a wall). Use the opportunity to provide a range of engaging activities such as design challenges about towers and bridges, prompted by inspirational images. Younger and older pupils alike will enjoy challenges to make the tallest tower from selection of materials such as card, newspapers, paper straws and building blocks. Make it more difficult by limiting the quantity of materials they have to build from, or by scoring separately for strength, accuracy and aesthetics. Pupils could also prepare questions to ask the professionals about their jobs, career choices and interests.

On site



Learning objective:

Pupils will have developed their understanding of the building process with first hand experience

Key subject links:

PSHE, DT, art, construction

The construction site offers a range of learning experiences. C&BE diploma pupils will have a real-life case study on their doorstep and younger pupils will enjoy the hard hat experience of a tour. All pupils should learn how to be safe on campus while the construction process is under way. And, by working with the construction firm, pupils can experience how a site is managed and developed, learning about a range of issues, such as health and safety, in detail. Pupils will witness first hand how the design and construction processes connect and will see how the spaces they have been considering and influencing are shaped. As a project in art and design or design and technology, and in liaison with the construction company, pupils could work with artists or graphic designers to design the hoardings for the site. This will help to make the construction site more attractive and will also serve to communicate progress to the community.

Document the process



Learning objective:

Pupils will have developed skills in recording and sharing information creatively and appropriately

Key subject links:

ICT, art, history, media

To help pupils look more closely at what is happening (and to serve as a record), pupils should document the process in a variety of creative ways. Photography is a great way to engage pupils and should start before the construction process begins and continue after the building is completed. Invite pupils to speed up the construction process by creating a flip book of the site. From the same spot, pupils could take one picture every day for a month, or a picture a week over a term. If the technology is available pupils could set up a video camera to create a time lapse piece. They could set up a webcam or create an audio portrait of the build process – interviewing people and recording sounds on site. To bring the process to life for the wider school community, documentation can be included on the school website via newsletters and special microsites, such as this one from Sharrow School in Sheffield: www.cabeurl.com/92



Sustainable construction

KS2 KS3 KS4

Learning objective:

Pupils will have an understanding of sustainable materials and will have considered how they can be used successfully on site

Key subject links:

Science, DT

Ask pupils to research the properties and roles of each material planned in the new school. They should think about the sustainability of the chosen materials.

- where and how have they been sourced?
- how far have they travelled?
- what is their embodied energy?
- are they renewable or recyclable?

Download clips of manufacturing processes (glass, steel, concrete, timber) and ask pupils to compare and contrast the raw materials and energy used. Explore local building materials and ideally visit manufacturing plants. Where possible, pupils should take an active role in a sustainable construction process on the school site, such as:

- creating insulation, for example from recycled newspaper: www.cabeurl.com/41
- building a bike shelter – could bricks or other materials be reclaimed from site?
- making greenhouses – from recycled plastic bottles
- constructing an outdoor classroom, for example using straw bales: www.cabeurl.com/90

© AAM Photography Ltd



Career choices

Aura, the local education partnership (LEP) in Newcastle, has been providing vocational learning opportunities to introduce pupils of Newcastle's schools to construction and design related professions. These engage pupils at key stages within the design and construction programme, and at key times within their life at school.

Aura works closely with school coordinators to focus on the curriculum. Teaching staff have noted the benefits of learning experiences linked to a live project and with outside professionals – increased attendance at sessions, an increased willingness to learn and raised aspirations are some.

By taking a versatile approach, activities can be tailored to the needs of each individual school and its pupils. For example, with the aim of reducing places where bullying could take place, year 10 and 11 pupils at Walbottle and Kenton schools led key decisions in relation to the design and procurement of toilet and rest areas.



© Aura Newcastle Ltd

As a key group to engage, we've provided C&BE diploma pupils with taster sessions and opportunities to develop key skills, such as:

- planning and designing a programme of work
- heritage issues
- environmental design
- materials selection.

We've also made a range of other opportunities available to pupils, including:

- apprenticeship schemes and sponsored degree opportunities
- short-term and long-term work placements
- a variety of practical activities.

The picture shows pupils working with Aura and a supply chain partner to survey a site:

www.auranewcastle.com

Marisa Nethercott
Community and communications manager, Aura Newcastle Ltd

Getting started

Looking closely

Development
and design

Construction



Moving in

Creative ways to use your completed building

Celebrate

It's important to consider ways for pupils and the wider school community to mark the opening of a new school – a celebration event recognises the hard work of everyone involved. You can do this in a range of ways, involving pupils in planning, marketing and managing the event. This could be an enterprise initiative in which pupils have to innovate and come up with new ideas. Activities could be curriculum linked – with pupils, for example, involved in writing press releases during English and designing tickets in DT.

Arts and culture are good routes to create a vibrant event to mark the start of your new school buildings – and providing a chance for pupils to be further inspired and find new talents. Many arts organisations have extensive experience working with pupils to develop key creative skills. Contact locally based arts and cultural organisations to partner with you to create a memorable celebration event. They could develop, with your pupils, site-specific performance pieces that respond to your new school building to showcase and 'premier' during the celebration. Pupils could also work with their own art, music and drama departments to create

something themselves. For example, at the City Academy in Hackney pupils wrote and performed their new school song.

On the day itself, an exhibition of pupils' involvement in the process could be unveiled. Recognise and celebrate the involvement of pupils who have shown additional commitment throughout the process (for example your design champions) in an awards ceremony. And of course, involve pupils in leading tours of the new building for governors and other guests. Keep the momentum of this special day by continuing to show pupils' work in new spaces and new ways.

To launch Phoenix, a new learning space made from a second-hand plane, Kingsland CE Primary School made special arrangements to celebrate and applaud what the pupils had achieved. Parents, families and special guests were invited to be part of the unveiling which included a speech from the children's author Michael Morpurgo, and a performance by the children of a song they had written to officially bring the Phoenix into Stoke-on-Trent. To read about the pupils' creative learning journey, including how they planned the interior and a PR campaign visit: www.thekingswings.com

Evaluate

When a building is complete it is very useful for users to be involved in post-occupancy evaluation – to review how the building is working and how it could be improved. Alongside the architects, pupils could produce their own 'snagging list' to report anything that is not working for the builders to 'make good' the building.

To help pupils explore the new building and communicate how they feel about it, re-use the *Design quality indicators for schools question cards* from the 'Inspirational visits' activity. This feedback will be very useful for you and the local authority.

It is extremely important for schools to share their experiences to support other schools going through similar processes. This could be achieved at management, teaching and pupil level. In English, pupils could write an estate agent's brief 'selling' their new school building. The school should be open for visits (for example through 'open doors' days) and pupils could lead tours of their new build for pupils (for example C&BE diploma) from other schools, improving speaking and listening skills. Teachers and pupils can share their successful journeys and support others by writing for the Engaging Places website www.engagingplaces.org.uk

The school should also gather evidence of the impact whole school aspirations have had on the end design and on pupil attainment and feed back to CABE.





Sustain

How the building is used and managed greatly affects its energy use and carbon production – carefully managing energy use also saves the school money. Hold a Green Day to prompt staff and pupils to adopt green practices in use of lights, equipment and recycling. Invite all pupils and staff to make a pledge about how they are going to use the new building in a more sustainable way. The architects will have designed the building to be used in certain ways for maximum energy efficiency – ask for an information pack on this. Some of the staff, including the caretaker, and pupils should be trained to know how to use this. They in turn can train their peer group. Pupils could even be involved in writing a handbook to inform other pupils about what green practices should be adopted for the building.

If you have installed a smart meter you can monitor energy use throughout the day and school year, and highlight to staff and pupils where change is needed.

Good maintenance will have an impact on the long term success of the building. Pupils should map all the day-to-day services and a typical day in the school. They could act as new build monitors and report when and where the building is not being used as it should. To keep wear and tear to a minimum a group of interested pupils could act as wardens to help combat problems with litter, organise recycling systems, and maintain the school grounds and gardens. They could also report any problems with the fabric of the building and write a maintenance manual for the school to follow.



© Aps Tomlinson

Develop

Are there extras that your school needs? Involve pupils in fundraising for those solar panels that were cut out of the budgets earlier. By now, you should have much improved school grounds. However, there is always more to be done and pupils could be involved in managing and improving the grounds by making sculptures and seating areas or growing food. The food grown at school could be sold to the local community or used to teach pupils (and parents) how to prepare healthy meals. There will also be internal spaces that could do with an injection of artwork – where possible work with professional artists to involve your pupils in the design and production of interesting pieces. Hopefully your new school build will help produce transformation in teaching and learning – so develop with it and come up with ideas for activities and projects in response to the new spaces you have.

‘A lot of what we did was similar to the work of a professional architect’

Year 10 pupil

Links

Useful organisations

Architecture Centre Network
www.architecturecentre.net

Becta
www.becta.org.uk

British Council for School Environments
www.bcse.uk.net

BSF and PCP Leadership online
future.ncsl.org.uk

Construction Skills
www.constructionskills.net

Learning through Landscapes
www.ltl.org.uk

Partnerships for Schools
www.partnershipsforschools.org.uk

RIBA
www.architecture.com

The Sorrell Foundation
www.thesorrellfoundation.com

Useful resources

Engaging Places
www.engagingplaces.org.uk

BSF Culture
www.bsf-culture.co.uk

DQI for schools
www.architecturecentre.org/publications

Imagine School Design
www.imagineschooldesign.org

Phases of Involvement in School Design
www.cabeurl.com/97

RIBApix
www.ribapix.com

SmarterPlaces
www.smarterplaces.org

Spaceshaper 9-14
www.cabeurl.com/8y

The City Academy, Hackney:
 The Story of Pupil Involvement
www.cabeurl.com/93

Get in touch

CABE is awarding 'Our school building matters' certificates to schools who let us know how they have used the toolkit and the impact it has had. If you would like to share your experiences of involving pupils in your new school build or refurbishment process please visit: www.cabe.org.uk/education

Commission for Architecture and the Built Environment (CABE) is the government's advisor on architecture, urban design and public space. At CABE we help schools design the campus and teach the curriculum. We offer expert advice to schools rebuilding or refurbishing their buildings or grounds. And we deliver resources and programmes that help teachers use the built environment to inspire memorable learning about any subject at every age. www.cabe.org.uk

Specialist Schools and Academies Trust (SSAT) is an independent, not-for-profit membership organisation dedicated to raising levels of achievement in secondary education. We have an international membership of over 5,600 schools and organisations. We are a

registered charity. Through our networks, the following areas of work are at the heart of everything we do: Achievement, Community, Education for 14-to-19-year-olds, Innovation, Leadership, New technologies, Pedagogy (the method and practice of teaching) and Specialism. www.ssatrust.org.uk

National Primary Headteachers (NPH) links primary headteachers throughout England with the aim of improving primary education. We are led by serving primary headteachers and membership is open to headteachers of all schools with primary-aged children. We are not, and do not seek to be, a union, but represent the needs and entitlements of primary children at the very highest levels. www.primaryheads.org.uk

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. The quality of the buildings and spaces where we live and learn has a profound impact on all our lives. Understanding how they get built, and knowing that local people can influence the process, gives pupils the skills and confidence to play a bigger, more positive role in their communities for the rest of their lives.

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