

WOODWORK PROGRESSION IN PRIMARY EDUCATION

Learning through doing

A BRIEF GUIDE FOR TEACHERS

This guide is aimed at schools that are planning to embed woodwork throughout their year groups. Building upon learning in previous years, it offers a logical progression of tools and skills and provides suggestions for potential projects for each year group.

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Woodwork Progression in Primary Education

Woodwork clearly will look very different if your class are experiencing woodwork for the first time or are building upon what they have learnt and experienced in previous years. This guide assumes a school progression, where each year groups will be building on from their previous years' woodwork experience. If, for example, you are introducing woodwork in Y4 for the first time you will need to ensure you have covered the progression steps covered in previous year groups. We also need to ensure that any new pupils that join the school are given opportunity to cover the previous content.

Projects

I offer suggestions of projects, to offer insight into the type of projects that would better suit certain year groups. In reality many of the projects could be done in any year group – the complexity would emerge from their growing maturity and skill level. A project on creating animals or sculptures for example could be perfectly effective at any age. Ideally pupils emerging interests will inform what projects are undertaken. Learning will be so much more successful if they play a part in deciding what they are going to make and how to go about making it. It is essential to offer freedom in the making process so they can come up with their own designs, solve their own problems in order to create unique work. If woodwork becomes about closely follow teachers instructions we strip all the imagination and creativity out of the woodwork experience. This does not negate our teaching of skills and new techniques, it's just that these will be most effectively learnt when they are addressing a real need during their making process.

Woodwork is about experiencing wood as a material and learning about working with tools. There is a certain aesthetic beauty to solely working with wood, but the incorporation of other materials generally allows for more opportunities for creative expression and can afford broader construction possibilities. In this way we can utilise many re-purposed materials, as well as materials such as string, wire and fabric.

Curriculum

Woodwork is holistic learning. It is a truly multi-disciplinary subject. Many aspects of the following subject areas can be incorporated:

Design and Technology

Mathematics

Science

Literacy

Geography

Art

Physical development

Sustainability

Personal development

Woodwork also supports important key dispositions to learning which develop a sense of agency and build character. Curiosity, perseverance, persistence, risk-taking, focus and concentration, resilience, doing things with care, pride in achievements, self-regulation, social skills, empathy, collaboration all can be developed through the experience of woodwork.

Creativity

Applying and developing creative and critical thinking skills is at the heart of woodwork. These thinking skills are both developed in the design stages and in the problem solving processes.

Sustainability

- Make and repair:** Woodwork helps counteract the current culture of “consume and dispose” by developing understanding of the value and joy of making and repairing. In a world driven by consumerism it is important we are mindful of demands on the world limited resources. Children need to develop an understanding that we can make and repair – and through woodwork children develop a sense of agency - that can-do spirit.
- Design:** By passively consuming, children are also removed from the design process. Through making and also deconstruction, children discover how things are made, see the elements of design and develop a sensitivity to material, its functional possibilities and the designed elements of an object. Through woodwork children will be discovering what it means to design and make, seeing their ideas come to life. In the future we will need innovative designers to create new ways of producing products, especially with efficient and sustainable resource conserving practices. Woodwork also can help foster an understanding of the properties of a variety of resources, from wood, to plastic, fabric, metal and so forth.
- Re-purpose:** Children can discover how they can re-purpose materials, by making models from a selection of recycled materials, utilising off cuts of wood and other items such as bottle tops and corks. This helps foster a mind-set of being resourceful and improvising.
- Connecting to nature:** Pupils can develop an understanding of where wood comes from. Seeing the beauty of wood, the feel and smell of wood etc, and the variety of types of trees how long trees take to grow... all can help create a stronger bond with the natural world and can develop respect for the value of wood and the need for us to take responsibility for our shared environment. Utilise found wood (sticks etc) as well as prepared wood. Children are more likely to protect what they care about. Planting trees with the children can further support this. Primary pupils are developing their fundamental attitudes and values, so any opportunity to embed thinking around sustainability should be embraced.
- Creative and critical thinking:** The thinking skills developed are higher order cognitive skills which we will need in the future to meet the challenges we face, to innovate and find new solutions – especially to the challenge we will all face of climate change. Woodwork is exceptional for developing creative and critical thinking with high levels of sustained engagement.
- More trees:** By using wood as a material, somewhat counterintuitively, we are encouraging even more trees being planted! We desperately need more global tree coverage. Trees benefit the environment by creating oxygen and storing carbon, in this way trees help counter climate change and offer some compensation for the environmental damage of our modern lifestyles. Trees are also good for the land; they can also help prevent flooding and soil erosion and regulate water and nutrient cycles, as well as provide a habitat for nature. So the more FSC wood we use results in more land that is dedicated to sustainably managed forestry. See below for detailed explanation.

Health and Safety, and Risk Assessment

In the UK many school activities were affected by overzealous health and safety policies in the 80s and 90s. At the time the feeling was that health and safety should eliminate risk, but this was at the expense of opportunity and irrespective of the benefits of experiencing risk. This climate of risk aversion was heavily influenced by the increasing litigation and compensation culture.

Health and safety laws were essentially designed around preventing death, serious injury and illness. It became abundantly clear that many interpretations were misguided and as a result children were losing out on valuable experiences needlessly. Fortunately the climate is now changing. Initially this was pioneered by Lord Young's Review of Health and Safety spanning industry and schools. The recommendations of the review, 'Common Sense, Common Safety' were immediately accepted by the Government in October 2010. The emphasis of the report in relation to educational settings was to encourage them to embrace risk in a positive sense and not to limit valuable opportunities available to children.

"This disproportionate approach (to health and safety) has had a negative impact on education in this country and has decreased the number of opportunities available to children to experience risk in a controlled environment" *Common Sense, Common Safety 2010* (Note 8.2)

Lord Young stated "I believe that with regard to children's play we should shift from a system of risk assessment to a system of risk-benefit assessment, where potential positive impacts are weighed against potential risk." The report highlighted the importance of children being able to experience risk as it is vital for children's development and should not be sacrificed because of overzealous health and safety and disproportionate risk assessments.

In 2012 the Health and Safety Executive published a report with similar recommendations and this was followed in 2013 by the Department of Education report (updated in 2014).

Department of Education – Health and Safety advice to schools (Feb 2014):

Key points were:

Children should be able to experience a wide range of activities. Health and safety measures should help them to do this safely, not stop them.

- It is important that children learn to understand and manage the risks that are a normal part of life.
- Common sense should be used in assessing and managing the risks of any activity. Health and safety procedures should always be proportionate to the risks of an activity.
- Staff should be given the training they need so they can keep themselves and children safe and manage risks effectively. (Note 8.3)

The Health and Safety Executive (HSE) provide the following guidance:

1. Health and safety laws and regulations are sometimes presented as a reason why certain play and leisure activities undertaken by children and young people should be discouraged. The reasons for this misunderstanding are many and varied. They include fears of litigation or criminal prosecution because even the most trivial risk has not been removed. There can be frustration with the amounts of paperwork involved, and misunderstanding about what needs to be done to control significant risks.

2. The purpose of this statement is to give clear messages which tackle these misunderstandings. In this statement, HSE makes clear that, as a regulator, it recognises the benefits of allowing children and young people of all ages and abilities to have challenging play opportunities.

3. HSE fully supports the provision of play for all children in a variety of environments. HSE understands and accepts that this means children will often be exposed to play environments which, whilst well-managed, carry a degree of risk and sometimes potential danger.

4. HSE wants to make sure that mistaken health and safety concerns do not create sterile play environments that lack challenge and so prevent children from expanding their learning and stretching their abilities.

Key message: 'Play is great for children's well-being and development. When planning and providing play opportunities, the goal is not to eliminate risk, but to weigh up the risks and benefits. No child will learn about risk if they are wrapped in cotton wool'.

Developing an understanding of risk in children

It is important that children have understanding of the context and meaning behind the rules and boundaries imposed. Thus it will raise their awareness of taking both individual and collective responsibility to keep safe. Teaching children about the concept of risk will help them to make their own decisions about risk so that they can recognise hazards and make judgements in a range of contexts.

The HSE and the Qualifications and Curriculum Authority (QCA) collaborated to provide guidance as to how risk should be discussed with children undertaking design and technology in primary and secondary schools. Clearly the guidance needs adapting for children in their early years but the same fundamental principle applies - that it our duty to dedicate time to discussing risk and health and safety rules.

The HSE/QCA statutory statement relevant for those teaching design and technology in primary and secondary schools says:

When working with tools, equipment and materials, in practical activities and in different environments, including those that are unfamiliar, pupils should be taught:

- about hazards, risks and risk control;
- to recognise hazards, assess consequent risk and take steps to control the risks to themselves and others;
- to use information to assess the immediate and cumulative risks;
- to manage their environment to ensure the health and safety of themselves and others;
- to explain the steps they take to control risks.

They go on to emphasise the benefits of learning about risk:

Teaching about the concept of risk will help pupils make their own decisions about risk so that they can:

- recognise the existence of hazards, risks and uncertainty in a range of contexts;
- assess their own ability, and the ability of others, to deal with different situations;
- assess the consequences when dealing with hazards presented to themselves and to others (for example, within school, the environment, the home);
- seek advice from appropriate sources to minimise and manage risk;
- understand that rules and regulations follow from risk assessment and help define individual and collective responsibility.

See Handouts:

Health and Safety Guidance
Example Risk assessment

Year: Nursery/ Pre-school 3-4 years (when class incorporated within Primary school)



New tool introduction:

Hammer, Small Dosuki Japanese pull saw, Screwdriver, Small hand drill, Sandpaper

Health and Safety:

Introduce tools with max 1:3 ratio
 Refer to Health and Safety guidance handout
 Refer to individual tool guidance
 Ensure risk assessment in place

Skill development & technical knowledge:

Embed competence with basic tools listed above
 Connecting with both nails and screws
 Combine with other materials such as string and fabric

Design thinking: Design Make Evaluate

Talk about what they might like to make
 Reflect of their project – evaluate
 Share and talk about their work with their peers

Possible project suggestions:

Encourage open-ended exploration.
 Allow children the freedom to make what they would like to make.

Year: Reception



New tool introduction:

Hammer, Small Dosuki Japanese pull saw, Screwdriver, Small hand drill, Sandpaper - if not done in Nursery

'Brace and bit' drill

Large pull saw

Low melt glue gun

Health and Safety:

Introduce new tools with a max 1:4 ratio

Refer to Health and Safety guidance handout

Refer to specific tool guidance

Ensure risk assessment in place

Skill development & technical knowledge:

Embed skills with tools above, connect using nails and screws

Combine with other materials such as string and fabric

Offer some basic mathematical equipment, tape measures, rulers, set-squares

Design thinking: Design Make Evaluate

Encourage drawing of initial designs

Plan what tools/ materials needed.

Evaluate and reflect on work, individually and in group

Possible project suggestions:

Sculptures – individual and larger collaborative

Animals

Robots

Simple instruments

Geo-boards

Year: Y1 KS1



New tool introduction:

Gimlets and Augers
 Spanner/wrenches
 Pliers, wire snips
 'Hot' glue gun
 G clamps



Health and Safety:

Introduce tools with max 1:6 ratio
 Refer to Health and Safety guidance handout
 Refer to tool guidance
 Ensure risk assessment in place

Skill development & technical knowledge:

Combine with nuts and bolts
 Add use of wire
 Use of axels/ wheels

Design thinking: Design Make Evaluate

Designing and planning
 Reflecting throughout the making process
 Evaluation including feedback from others

Possible project suggestions:

Transport/ vehicles
 Instruments
 Boats
 Large scale : Scarecrows

Year: Y2 KS1



New tool introduction:

Embed previous tool use

Health and Safety:

Introduce tools with max 1:6 ratio
 Refer to Health and Safety guidance handout
 Refer to specific tool guidance
 Ensure risk assessment in place

Skill development & technical knowledge:

Growing attention to care and accuracy/measurement
 Attention to robustness/ strength of connections
 Attention to final finish, sanding, paint etc.

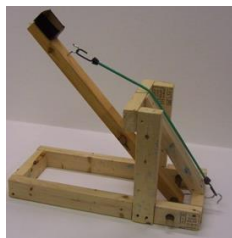
Design thinking: Design Make Evaluate

Detailed design including research element, Planning
 Reflection throughout the making process
 Reflection and evaluation of final work
 Talk about chronology/order of making/ possibly photographic record of process

Possible project suggestions:

Bridges. Structures - pylons etc. Architectural models
 Simple games – marble run, tic tac toe etc.
 Tool boxes
 Bird boxes
 Bug hotels

Year: Y3 KS2



New tool introduction:

Double sided dosuki hand saw

Health and Safety:

Introduce tools with max 1:8 ratio
 Refer to Health and Safety Guidance
 Refer to tool Guidance
 Ensure risk assessment in place

Skill development & technical knowledge:

Elements that include kinetic motion/ moving parts,
 Wheels/ axels
 Possible inclusion of simple circuits – a light, bell, etc.

Design thinking: Design Make Evaluate

Research different type of wood, material properties, uses, where originates, sawmill process etc.
 Detailed design research element, Draw templates of parts
 Increasing accuracy. Share and clarify ideas through discussion.

Possible project suggestions:

Projectile/ motion-catapult
 Deconstruction of appliances/ machines.
 Windmills/ wind turbines/ weather vane
 Larger collaborative projects – planter, sound garden/ mud kitchen/playhouse etc.
 Simple chairs

Year: Y4 KS2



New tool introduction:

Coping saw
Files/rasps

Health and Safety:

Introduce tools with max 1:8 ratio
Refer to Health and Safety guidance handout
Refer to specific tool guidance
Ensure risk assessment in place

Skill development & technical knowledge:

Shaping wood with coping saw/ files/ rasps/ sandpaper

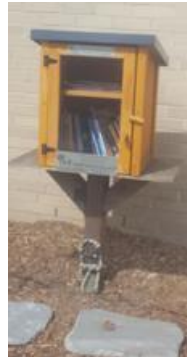
Design thinking: Design Make Evaluate

Embed detailed design/plan/evaluation
Possible addition of computer design/ sketch up
Focus on end-user/ survey/interview etc. Research/design with end user in mind.

Possible project suggestions:

Games – marble runs etc. wooden acrobat - automata
Fairgrounds, clocks
Puppets/animals
Combination of more 'found' wood, mini-log cabin

Year: Y5 KS2



New tool introduction:

Electric fret saw/ scroll saw
 Small cordless battery drill
 Electric bench drill
 Pyrography pen
 Hand plane, Spoke shave

Health and Safety:

Introduce tools with max 1:8 ratio
 Refer to Health and Safety Guidance
 Refer to tool guidance
 Ensure risk assessment in place
 PAT test of electrical items

Skill development & technical knowledge:

Combining with simple electrics
 Cams/leavers/linkages/gears pulleys
 Pyrography

Design thinking: Design Make Evaluate

Analyse environment impact/ footprint of materials
 Analyse cost of materials
 Detailed plans with measurements/angles etc.

Possible project suggestions:

Furniture – chair/ table, Kinetic animals. Mechanisms
 Robots
 Library box – collaborative project
 Games with electrics
 Planters, compost bins, school signs

Year: Y6 KS2



New tool introduction:

Embed use of all tools from all previous years.

Health and Safety:

Introduce tools with max 1:8 ratio
 Refer to Health and Safety guidance
 Refer to tool guidance
 Ensure risk assessment in place
 PAT test of electrical items

Skill development & technical knowledge:

Possible combination with simple electronics
 Coding/program and control element

Design thinking: Design Make Evaluate

Detailed design/ Evaluation
 Research materials used and how they are produced
 Embed sustainability thinking

Possible project suggestions:

Go-karts with electric elements – horn/lights
 Large scale collaborative: shed, planters, compost bins
 Things the school needs, shelves, new coat pegs etc
 More elaborate games, table football, pin ball machine
 Large scale sculpture or wall relief

Individual project options:	Collaborative project options:
<p>Important to keep these as open-ended as possible...</p> <p>Boxes Chairs Instruments Picture frames Trivet coasters Go-karts Cars Boats Planes Games Marble runs Robots Animals Architecture Towers Wall reliefs Sculptures Catapults Windmills Puppets Tool box Automata Pull toys Trains Bird boxes Wands Table tennis bat Clocks Nail and thread art Assemblages from deconstructed items</p>	<p>When thinking about buying new equipment... think...Could we make it?!</p> <p>Shed Fencing Mud kitchen Sound garden Multi-sensory area Sand pit Role play props/ shop/ petrol station Plant troughs Flower boxes Sculptures Wind turbine Weather vane Workbench Chair/Bench Table Bug hotel Library box house Frame for tent Gazebo/ Shade shelter Balance boards Plank ladders Coat hooks board Instruments Chimes Picture frame Storage boxes Height ruler Football goal Basketball goal Stilts Climbing planks Trellis Workbench Sawhorse Shelving Table football</p>

General objectives: Foundation/ KS1/ KS2:

These cover 4 key elements:

- Generating and developing design ideas
- Planning
- Making: Practical skills and techniques, problem-solving
- Critique and evaluation

Foundation:

Expression of ideas through the medium of wood

Create simple representations

Use a variety of construction materials

Join construction pieces together

Understand tools are used for specific purposes

Manipulate materials to achieve a planned effect

Use simple tools and techniques competently and appropriately

Construct with purpose in mind using variety of resources

Selects resources appropriately and adapts work where necessary

Selects tools and techniques needed to shape, assemble and join materials they are using

Understand the importance of self-care and need to adhere to health and safety measures

Start to design work in advance of making

Problem-solve to adapt and resolve their work

Reflect on work, evaluating the output and process

KS1:

State what products they are designing and making

Say whether their products are for themselves or other users

Describe what their models are for

Say how they will make their products suitable for their intended users

Use simple design criteria to help develop their ideas

Use knowledge of existing products to help come up with ideas

Develop and communicate ideas by talking and drawing

Model ideas by making templates, mock-ups and prototypes

Plan by suggesting what to do next

Select from a range of tools and equipment, explaining their choices

Select from a range of materials and components according to their characteristics

Discuss and follow procedures for safety

Measure, mark out, cut and shape materials and components

Assemble, join and combine materials and components

Use finishing techniques, including those from art and design

Talk about their design ideas and what they are making

Suggest how their products could be improved

Know about the simple working characteristics of materials, components and mechanisms

Know how structures can be made stronger, stiffer and more stable

KS2

Describe the purpose of their products
Indicate the design features of their products that will appeal to intended users
Explain how particular parts of their products work
Gather information about the needs and wants of particular individuals and groups
Develop their own design criteria and use these to inform their ideas
Carry out research, using surveys, interviews, questionnaires and web-based resources
Identify the needs, wants, preferences and values of particular individuals and groups
Develop a simple design specification to guide their thinking
share and clarify ideas through discussion
Model their ideas using prototypes and pattern pieces
Use annotated sketches, cross-sectional drawings and exploded diagrams to develop ideas
Use computer-aided design to develop and communicate their ideas
Generate realistic ideas, focusing on the needs of the user
Make design decisions that take account of the availability of resources
Generate innovative ideas, drawing on research
Make design decisions, taking account of constraints such as time, resources and cost
Select tools and equipment suitable for the task
Explain their choice of tools and equipment in relation to the skills and techniques they will be using
Select materials and components suitable for the task
Explain their choice of materials and components according to functional properties and aesthetic qualities
Order the main stages of making
Produce appropriate lists of tools, equipment and materials that they need
Formulate step-by-step plans as a guide to making
Follow procedures for safety and hygiene
Use a wider range of materials and components than KS1
Measure, mark out, cut and shape materials and components with some accuracy
Assemble, join and combine materials and components with some accuracy
Apply a range of finishing techniques, including those from art and design, with some accuracy
Accurately measure, mark out, cut and shape materials and components
Accurately assemble, join and combine materials and components
Accurately apply a range of finishing techniques, including those from art and design
Use techniques that involve a number of steps
Demonstrate resourcefulness and problem solving skills when tackling practical problems
Identify the strengths and areas for development in their ideas and products
Consider the views of others, including intended users, to improve their work
Refer to their design criteria as they design and make
Use their design criteria to evaluate their completed products
Critically evaluate the quality of the design, of their products as they design and make
Evaluate their ideas and products against their original design specification
How to use learning from science to help design and make products that work
How to use learning from mathematics to help design and make products that work
Know that materials have both functional properties and aesthetic qualities
Understand that materials can be combined and mixed to create more useful characteristics
Learn the correct technical vocabulary for the projects they are undertaking
Learn how simple electrical circuits and components can be incorporated in their work
Understand how to reinforce and strengthen their 3D work

Selection of key tools: See equipment sheet handout for full list, details and suppliers



Small 160cm pull saw	
Stubby hammer Ball-pein and claw	
Screwdriver (stubby) PZ2	
Hand drill	
Large pull saw	
Gimlets	
Augers	
Safety glasses	
Brace and bit	
Coping Saw	
Wrench and spanners	

Training:

INSET/ CPD professional development is available throughout the UK and internationally

Woodwork CPD

INTRODUCING WOODWORK IN PRIMARY EDUCATION

- introduction to woodwork. Historical and current context. Equal opportunities.
- Theory: Associated learning and development. Links to curriculum
- Introduction to tools, wood, resources and workbenches
- How to set up a woodwork area and manage the provision
- Health and safety and risk assessment
- Whole school progression in woodwork
- Longer term and collaborative projects
- Top tips for successful provision
- Practicals: Teacher hands-on experiences

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