General list of skills for Key stages (UK Primary Ks1& KS2)

Foundation Stage (Reception) and Key Stage 1 (Years 1-2):

1. **Creativity and Imaginative Thinking:**
   - Generate ideas through play and exploration.
   - Use imagination to design simple products.
2. **Basic Construction Skills:**
   - Explore and manipulate a variety of materials.
   - Use basic tools for cutting, joining, and shaping.
3. **Understanding Materials:**
   - Identify and name basic materials (e.g., wood, plastic, fabric).
   - Explore materials for specific properties (e.g., flexibility, rigidity).
4. **Simple Mechanisms:**
   - Explore and create simple moving parts and mechanisms.
   - Understand cause and effect in basic structures.
5. **Designing for a Purpose:**
   - Create products for specific purposes based on simple design criteria.
   - Understand basic user needs and preferences.

Key Stage 2 (Years 3-6):

1. **Design Process:**
   - Understand and apply the iterative design process (research, design, make, evaluate).
   - Develop design specifications and criteria.
2. **Advanced Construction Skills:**
   - Use a wider range of tools and equipment with increasing proficiency.
   - Explore more complex construction techniques.
3. **Materials and Their Properties:**
   - Investigate and compare properties of different materials.
   - Choose materials based on their suitability for a given task.
4. **Mechanisms and Electronics:**
   - Explore and create more advanced mechanical systems.
   - Introduce basic electronic components and circuits.
5. **Computer-Aided Design (CAD):**
   - Use basic CAD tools to create and modify designs.
   - Understand how digital technologies can aid the design process.
6. **Problem-Solving:**
   - Identify problems and develop solutions through design thinking.
   - Evaluate and modify designs based on testing and feedback.
7. **Sustainability and Environmental Awareness:**

- Explore the environmental impact of materials and products.
- Consider sustainability in design and making decisions.

8. **User-Centered Design:**
    - Understand the needs and preferences of end-users.
    - Design products with a focus on user experience.
9. **Prototyping:**
    - Create prototypes to test and refine designs.
    - Understand the importance of prototyping in the design process.
10. **Communication Skills:**
    - Use a variety of methods to communicate design ideas (sketching, modeling, presenting).
    - Collaborate effectively with peers in design projects.

These skills are introduced, developed, and reinforced progressively across the different year groups, allowing students to build a strong foundation in design and technology throughout their primary education in the UK.

Detailed skills progression by year group.

Year 1

In Design and Technology (DT) for Year 1 students (typically 5-6 years old), the focus is on introducing foundational skills related to creativity, basic construction, and exploring materials. Here are some key skills for Year 1 in DT:

1. **Creativity:**
    - Generate ideas through play and exploration.
    - Use imagination to create simple designs and products.
2. **Basic Construction Skills:**
    - Explore and manipulate a variety of materials such as paper, cardboard, and playdough.
    - Begin to use basic tools for cutting, joining (with adult assistance), and shaping.
3. **Understanding Materials:**
    - Identify and name basic materials used in simple projects.
    - Explore the properties of materials through touch and observation (e.g., hard, soft, smooth, rough).
4. **Expressing Ideas:**
    - Communicate simple design ideas through drawings or models.
    - Begin to use simple design language to describe creations.
5. **Following Simple Instructions:**

- Listen and follow simple instructions during creative activities and construction projects.
- Develop basic understanding of safety rules when using tools and materials.

6. **Problem-Solving:**
   - Begin to identify and solve simple design problems.
   - Understand the concept of trial and error in the design and making process.
7. **Group Work:**
   - Participate in collaborative design and construction activities with peers.
   - Share and discuss ideas within a small group.
8. **Exploring Shapes and Structures:**
   - Explore and create simple shapes and structures using various materials.
   - Develop an understanding of how basic shapes can be combined to create more complex forms.
9. **Safety Awareness:**
   - Begin to understand and follow basic safety rules when using tools and materials.
   - Develop awareness of the importance of being responsible and careful during design and making activities.
10. **Introduction to Design Language:**
    - Begin to use and understand basic design vocabulary such as "design," "create," and "make."
    - Develop an awareness of the purpose of design in creating products.

Year 1 in DT is about fostering creativity, introducing basic construction skills, and building an awareness of materials and their properties. Activities and projects should be age-appropriate, hands-on, and designed to encourage exploration and expression in a safe and supportive environment.

Year 2

In Year 2 Design and Technology (DT) for students aged around 6-7 years old, the focus continues to build on the foundational skills introduced in Year 1. Here are key skills for Year 2 in DT:

1. **Creativity and Imagination:**
   - Generate ideas and use imagination to create simple designs.
   - Explore and experiment with different materials to express creativity.
2. **Basic Construction Techniques:**

- Use a variety of basic tools for cutting, joining, and shaping materials (with adult guidance).
- Begin to follow simple instructions to assemble and construct projects.

3. **Understanding Materials:**
   - Explore a broader range of materials and understand their basic properties.
   - Identify suitable materials for specific projects based on simple criteria.
4. **Communication and Design Language:**
   - Use more detailed language to communicate design ideas.
   - Begin to annotate drawings or models with simple labels or descriptions.
5. **Problem-Solving:**
   - Identify simple design problems and propose solutions.
   - Understand the importance of testing and refining designs.
6. **Group Collaboration:**
   - Work collaboratively in small groups on design and construction projects.
   - Share ideas and make decisions together as a team.
7. **Safety Awareness:**
   - Demonstrate increased awareness and adherence to safety rules when using tools and materials.
   - Understand the importance of responsible behaviour during DT activities.
8. **Simple Planning and Organization:**
   - Begin to plan and organize the steps involved in a simple design and construction project.
   - Follow a basic plan or sequence of steps to complete a task.
9. **Expressing Preferences:**
   - Develop the ability to express personal preferences in design choices.
   - Understand that design decisions can be influenced by individual preferences.
10. **Introduction to User-Centered Design:**
    - Consider simple user needs when designing and making projects.
    - Understand that products are created to meet the needs or desires of people.
11. **Exploration of Simple Mechanisms:**
    - Explore and create simple moving parts and mechanisms in design projects.
    - Understand basic cause-and-effect relationships in simple constructions.
12. **Introduction to Sustainability:**

- Begin to explore basic concepts of sustainability in relation to materials and projects.
- Develop an early awareness of the environmental impact of design choices.

Year 2 in DT continues to emphasize hands-on exploration, creativity, and collaboration. Students are introduced to slightly more complex tools and techniques while still focusing on safety. The design process becomes more structured, and students start to consider user needs and preferences in their projects

Year 3

In Year 3 Design and Technology (DT) for students aged around 7-8 years old, there is a progression in skills building on the foundational knowledge from previous years. Here are key skills for Year 3 in DT:

1. **Design Thinking:**
   - Begin to use a structured design process, including research, design, make, and evaluate.
   - Develop the ability to ask questions and consider different solutions to design challenges.
2. **Materials Exploration:**
   - Explore a wider range of materials, considering their properties and suitability for specific purposes.
   - Understand the characteristics of materials such as strength, flexibility, and durability.
3. **Tool Proficiency:**
   - Demonstrate increased proficiency in using a variety of tools for cutting, shaping, and joining materials.
   - Follow safety guidelines independently when using tools.
4. **Designing for a Purpose:**
   - Create products with specific purposes in mind.
   - Consider user needs and preferences in the design process.
5. **Problem-Solving and Iteration:**
   - Identify problems in the design process and propose solutions.
   - Understand the importance of refining designs through testing and evaluation.
6. **Collaborative Projects:**
   - Work collaboratively on larger-scale design and construction projects.
   - Share responsibilities within a group to accomplish project goals.
7. **Measuring and Accuracy:**

- Develop basic measuring skills using rulers or other measurement tools.
- Demonstrate an understanding of accuracy in design and construction.

8. **Simple Electronics:**
    - Explore basic electronic components and circuits in design projects.
    - Understand simple principles of electricity and how it can be used in designs.
9. **Research and Information Gathering:**
    - Conduct simple research to gather information for design projects.
    - Use age-appropriate resources to find information related to design challenges.
10. **Communication Skills:**
    - Use clear and detailed language to explain design ideas and processes.
    - Present design projects to peers, discussing choices and solutions.
11. **Reflection and Evaluation:**
    - Reflect on the success and challenges of a design project.
    - Evaluate designs based on criteria and make improvements.
12. **Understanding Structures:**
    - Explore more complex structures in design projects.
    - Understand basic principles of stability and balance.
13. **Introduction to CAD (Computer-Aided Design):**
    - Begin to use basic digital tools for design.
    - Understand the basics of creating and modifying designs using digital software.
14. **Awareness of Sustainable Design:**
    - Introduce concepts of sustainability in design choices.
    - Consider the environmental impact of materials and design decisions.

Year 3 in DT marks a progression in the complexity of design projects, tools, and materials. Students are encouraged to think critically, collaborate effectively, and consider user needs in their design solutions. The focus on safety remains essential as students continue to develop their skills in a hands-on learning environment

Year 4

In Year 4 Design and Technology (DT) for students aged around 8-9 years old, there is a further development of skills building upon the foundation laid in previous years. Here are key skills for Year 4 in DT:

1. **Advanced Design Thinking:**
    - Use a more refined design process, considering the iterative nature of design.

- Develop a deeper understanding of user needs and preferences in design challenges.

2. **Materials Expertise:**
   - Explore a broader variety of materials, including textiles, metals, and plastics.
   - Understand advanced properties of materials and their suitability for specific applications.
3. **Tool Mastery:**
   - Demonstrate increased mastery of tools for cutting, shaping, and joining materials.
   - Independently follow safety protocols when using tools.
4. **Designing with Precision:**
   - Develop more advanced measuring skills and use precision in design and construction.
   - Understand the importance of accurate measurements in achieving desired outcomes.
5. **Problem-Solving and Iteration:**
   - Engage in more complex problem-solving within the design process.
   - Iterate designs based on testing, evaluation, and user feedback.
6. **Collaborative Project Management:**
   - Work collaboratively on extended and more intricate design and construction projects.
   - Take on specific roles and responsibilities within a group.
7. **Electronics and Simple Programming:**
   - Explore more advanced electronic components and basic programming concepts.
   - Understand how simple circuits can be controlled to achieve specific outcomes.
8. **Research and Analysis:**
   - Conduct more in-depth research using a variety of resources.
   - Analyse information to inform design decisions and solve design challenges.
9. **Communication and Presentation:**
   - Effectively communicate design ideas using clear and detailed language.
   - Present design projects to an audience, articulating design choices and solutions.
10. **Reflection and Evaluation:**
    - Reflect critically on the success and challenges of a design project.
    - Evaluate designs based on more complex criteria and implement improvements.
11. **Understanding Complex Structures:**

- Explore and create more intricate and stable structures in design projects.
- Understand how different materials contribute to structural stability.

12. **Advanced CAD (Computer-Aided Design):**
    - Use more advanced digital tools for design, including 2D and simple 3D modelling.
    - Understand the basics of creating and modifying digital designs.
13. **Sustainable Design Practices:**
    - Incorporate sustainability principles into design choices.
    - Consider the environmental impact of materials and processes in design projects.

Year 4 in DT builds on the skills acquired in previous years, introducing more complexity in design challenges and tools. The focus on safety remains crucial as students continue to develop their abilities in a hands-on and collaborative learning environment

Year 5

In Year 5 Design and Technology (DT) for students aged around 9-10 years old, the focus is on further developing advanced skills in design, construction, and problem-solving. Here are key skills for Year 5 in DT:

1. **Advanced Design Thinking and Process:**
    - Use a sophisticated design process, incorporating research, analysis, design, prototyping, testing, and evaluation.
    - Demonstrate an understanding of the importance of iteration in refining designs.
2. **Materials Expertise:**
    - Explore and experiment with a wide range of materials, considering their properties, sustainability, and suitability for specific purposes.
    - analyse the environmental impact of material choices.
3. **Advanced Tool Mastery:**
    - Demonstrate proficiency in using a variety of advanced tools and equipment independently and safely.
    - Understand how different tools contribute to the construction process.
4. **Precision in Design and Construction:**
    - Use precise measurements and cutting techniques in the design and construction process.
    - Demonstrate accuracy and attention to detail in the fabrication of products.
5. **User-Centred Design:**

- Conduct in-depth user research to understand and address user needs and preferences.
- Design products with a strong focus on user experience.

6. **Problem-Solving and Critical Thinking:**
   - Engage in complex problem-solving within the design process, addressing challenges creatively.
   - Use critical thinking to analyse and overcome design constraints.
7. **Independent and Collaborative Project Management:**
   - Manage individual design projects independently from concept to completion.
   - Collaborate effectively within a team, assigning roles and responsibilities for efficient project management.
8. **Advanced Electronics and Programming:**
   - Explore advanced electronic components and basic programming concepts.
   - Understand how to integrate electronics into design projects for enhanced functionality.
9. **Research and Analysis:**
   - Conduct thorough and detailed research using a variety of primary and secondary sources.
   - Analyse and synthesize information to inform complex design decisions.
10. **Communication and Presentation Skills:**
    - Communicate design ideas effectively using advanced and precise language.
    - Present design projects confidently to an audience, articulating design choices and solutions.
11. **Reflection and Continuous Improvement:**
    - Reflect critically on the entire design and making process.
    - Implement continuous improvement strategies based on self-reflection and peer feedback.
12. **Understanding Complex Structures:**
    - Explore and create highly intricate and stable structures in design projects.
    - Understand how structural considerations impact the overall design.
13. **Advanced CAD (Computer-Aided Design):**
    - Use advanced digital tools for design, including 2D and 3D modelling.
    - Demonstrate proficiency in creating and modifying digital designs independently.
14. **Sustainable Design Practices:**
    - Integrate sustainable design principles throughout the design process.

- Make informed decisions about material choices and processes with a focus on environmental impact.

Year 5 in DT marks a stage where students are expected to apply their skills to more complex and independent design challenges. The emphasis on precision, sustainability, and user-centred design becomes more prominent as students continue to refine their abilities in a hands-on and collaborative learning environment.

Year 6

In Year 6 Design and Technology (DT) for students aged around 10-11 years old, the focus is on refining and applying advanced skills in design, construction, and problem-solving. Here are key skills for Year 6 in DT:

1. **Advanced Design Thinking and Process:**
   - Utilize a highly refined design process, including in-depth research, ideation, prototyping, testing, and evaluation.
   - Understand the importance of adaptability and flexibility in the design process.
2. **Materials Expertise:**
   - Investigate and experiment with a wide range of advanced materials, considering their properties, sustainability, and appropriateness for specific applications.
   - Analyse and evaluate the environmental impact of material choices.
3. **Mastering Tools and Equipment:**
   - Demonstrate mastery in using a variety of advanced tools and equipment independently and safely.
   - Understand how different tools contribute to precision in the construction process.
4. **Precision in Design and Construction:**
   - Use advanced measurement techniques and cutting methods to achieve precision in design and construction.
   - Demonstrate a high level of accuracy and attention to detail in the fabrication of products.
5. **User-Centred Design:**
   - Conduct comprehensive user research, incorporating empathy and user feedback to inform design decisions.
   - Design products with a strong emphasis on meeting user needs and preferences.
6. **Problem-Solving and Critical Thinking:**

- Engage in highly complex problem-solving within the design process, demonstrating advanced critical thinking skills.
- Analyse and overcome multifaceted design challenges creatively.

7. **Independent and Collaborative Project Management:**
    - Independently manage and lead individual design projects from concept to completion.
    - Collaborate effectively within a team, demonstrating leadership and effective delegation of roles and responsibilities.
8. **Advanced Electronics and Programming:**
    - Explore and apply advanced electronic components and programming concepts.
    - Integrate electronics seamlessly into design projects to enhance functionality and user experience.
9. **Advanced Research and Analysis:**
    - Conduct sophisticated research using a variety of primary and secondary sources.
    - analyse and synthesize complex information to inform and support intricate design decisions.
10. **Effective Communication and Presentation:**
    - Communicate design ideas persuasively using advanced and precise language.
    - Deliver confident and engaging presentations to a varied audience, effectively conveying design choices and solutions.
11. **Critical Reflection and Continuous Improvement:**
    - Engage in critical reflection on the entire design and making process, identifying areas for improvement.
    - Implement strategies for continuous improvement based on self-reflection and peer feedback.
12. **Understanding Complex Structures:**
    - Explore and create highly intricate and stable structures in design projects, considering advanced structural principles.
    - Understand how structural considerations impact the overall design and functionality.
13. **Advanced CAD (Computer-Aided Design):**
    - Use advanced digital tools for design, including 2D and 3D modelling, with a high level of proficiency.
    - Demonstrate the ability to create and modify complex digital designs independently.
14. **Sustainable Design Practices:**
    - Integrate and champion sustainable design principles throughout the design process.

- Make informed decisions about material choices and processes, prioritizing environmental impact and sustainability.

Year 6 in DT represents a stage where students are expected to apply their advanced skills to intricate and independent design challenges. The emphasis on precision, sustainability, and user-centred design remains crucial as students continue to refine their abilities in a hands-on and collaborative learning environment.