WFA Progression Map - planning for knowledge/skills etc to build & accumulate sequentially over time

WESTON FAVELL ACADEMY

Key: ***Bold** writing shows development or progression from previous year. *<u>Underline</u> shows cross-over of key concepts with other end-points

Faculty: OPEN Faculty	**Subject: DT**

End points	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**	**Year 11**
Specialist tools and equipment To combine practical and technological skills with creative thinking and problem solving to makeproducts and systems to meet human needs **Key**		To recognise a range of safety signs and know whatred circle, yellow triangle, blue and green signs mean To be able to identify workshop hazards To be able to follow workshop safety rules To be able name and use a template To be able to measure accurately To be able to use a tri square To be able to do 2 types ofhand stich To have used	**To be able to use a pillar drill and disk sander independently and safety** **To be able to name and explain the function of PPE** **To be able to change acoping saw blade** **To mark out neatly anddouble check measurements** **To be able to cut accurately and make alterations/amendments where necessary** **To be able to solder asimple PCB** **To have used the line bended with supervision**	To be able to use a wider range of processes safely:line bending, hot glue, casting To have used a jig and be able to explain the benefit ofits use with reference to batch production To be able to solder a PCB which includes a microchip To have created a jig and used it with the vacuum former/line bender To be able to make a MDFmould and cast into it To be able to use polish andachieve a quality finish	To be able to use a range ofworkshop tools independently and safely To be able to use hand heldpower tools To be able to nest templatesTo be able to plan and sequence tasks to complete practical work To be able to produce a 3D model which is printed usinga 3D printer To be able to use the linebender independently To be able to use CAD/CAMto make MDF moulds To be able to label an injection moulding machine and state its benefits	To be able to explain the hazards and precautions in the workshop with referenceto ISO signage for all equipment. To be able to decide and implement the most appropriate way to manufacture a product usingjigs and templates To be able to saw and drillaccurately To be able to solder, handsew accurately To be able to explain the 3D printing process and state itsapplications To be able to vacuum formand line bend accurately and independently To be able to explain the casting process. To be ableto produce a mould independently

		the vacuum former with supervision			To be able to apply other surface decoration- engraving/ decals	To be able to explain injection moulding and extrusion with reference toparts of the machines and scale of production To be able to finish a plastic product to a high standard
6 Materials and their properties To have and apply an understanding of a wide range of materials, being able to choose and justify their use in relation to theiraesthetic, technical, economic, cultural, and physical properties. Sources and origin of plastic Thermoforming plastic Thermosetting plastic Density ConductivityStrength Hardness Toughness Malleability Elasticity Stock forms reinforcing		To know the original sourceof natural fabrics, timbre, papers, metals and plastics To know that some shapesare stronger than others To know the terms strength and elasticity To be able to name a range of parts-screws, hinges, nutsbolts.	**To understand the basic sourcing and production ofnatural fabrics, papers andtimbres including recycling** **To be able to test the weight capacity of a plasticbag compared to a paper bag** **To know difference between tension andcompression** **To know the terms hardness and conductivity**	**To understand the basic sourcing and production ofmetals and polymers including recycling** **To understand materialstrength testing and destructive testing** To know tension, compression, torsion andsheer To know materials that astrong in each case	To be able to explain the fullsourcing and production of polymers Students should recognise carbon fibre and reinforced concrete and be able to explain its benefits To be able to modify a design to make it stronger	To be able to explain the fullsourcing and production of polymers with reference to scientific terms- fractional distillation and cracking To be able to give examplesof uses of composite materials with reference totheir properties and appropriate products To able to suggest another material that could be addedto improve performance in agiven situation

			To be able to name a rangeof stock forms	To be able to test materialsfor a range of physical properties To know some of the size ranges stock forms come in	To be able to suggest appropriate materials for different applications To be able to include stockforms and bought in components in their own designs	To be able to define. And give appropriate examples • strength • hardness • toughness • malleability •ductility and elasticity. absorbency (resistance to moisture) • density • fusibility • electrical and thermal conductivity.
Investigation with primaryand secondary data To be able to conduct primary and secondary research relating: aesthetic, technical, cultural, social, economic, industrial and environmental issues. To understand and apply findings to inform design decisions.		To be able to conduct a survey and draw a bar chart To be able to say the goodand bad things about a range of similar products To be able to research similar products and statepreferences	To be able to make suggestions about what a product should be like withreference to data To know the differencebetween primary and secondary data To be able to research similar products and spottrends	To be able to collect quantitative data To be able to graphically represent data using a computer To be able write speciationpoints with reference to data To understand the term anthropometrics	To understand the difference between short questions and interview questions and their benefits To be able to use peer feedback to inform design To understand the terms: ergonomics and anthropometrics To be able to compare similar products	To be able to independentlysuggest and implement strategies to researching a problem. To be able to graphicallyrepresent data To be able to justify design decisions with reference todata To be able to create survey questions which will informdesign To be able to use

				To be able to research similar products and make conclusions in the form of specification points	against each other and draw conclusions To be familiar with the work of phillip stark and alessi And be able to describe them	feedback to inform design To be able to justify different research methodologies To be able to give a range of sizes using a bell curve To be able to describe design features of Ettore Sottsass and Phillippe starck And design features of **Alessi** Dyson, with reference to their place in the history of design
Critical evaluation and disruptive technologies **To be a participant in advances in manufacturing,to be able utilise CAD CAM.**		To understand that materials are sourced from material environment **3Rs** **To recognise: Reduce, reuse, recycle** To be able to compare using a computer vs by hand	To understand the difference between a finite and infinite resource **3Rs** **To explain: Reduce, reuse,recycle** To be able to produce a CAD file To understand how a laser cutter functions and its advantages over cutting by hand	To understand that the sourcing and refining of materials produce greenhouse glasses To understand the effects of global warming **To be able to define the 6Rs** To be able to describe the process of using CAD/CAM	**To be able to describe how polymers are sourced and produced** **To be able to compare the choices of materials in terms of carbon footprint** To understand the effects of global warming **To be able to define the 6Rs with an example**	To be able to complete a product life cycle To be able to justify environmental improvements To be able to explain C02 warms the climate **To be able to suggest changes to a product using the 6Rs** To be able to describe

					To be able to describe the process of using CAD/CAM To be able to describe 3D printing and its benefits **To be able to draw basic designs on google sketch up**	the process of using CAD/CAMTo be able to describe 3D printing and its benefits To understand the terms: • just in time (JIT) • lean manufacturing. **To be able to suggest how a construction site of the future will be different with regards to automation.**