Brief to design and make a terrarium suitable for growing small plants in that uses regular shaped tessellations

Specification

- There must be easy access to the plants.
- The terrarium must sit on a stable base.
- The terrarium must be constructed from acrylic.
- You must use CAD.
- The terrarium must be smaller than an area of

assessment

- You will be assessed on how you will find out about existing products.
- How you use your skills for designing, sketching ,CAD and modelling.
- How you experiment with joining materials.
- How well you manufacture your product.

AF1 Understanding design and technology in society	you	level	teacher
I have looked at how other designers use materials tessellations and how I can make a terrarium		6	
I have looked at the materials I have used and have shown I understand where they come from.		5	
I understand why we need to use greenhouses for agriculture.		4	
I Have looked at how architects use tessellation?		3	
AF 2 Designing			
I have implemented maths theory about shapes and angles and used it creatively.		6	
I have designed using sketching and CAD (google sketchup)		5	
I have built a successful model of a geodesic dome		4	
I have looked how designers use tessellation in my designs.		3	
AF 3 Making and reviewing			
I have tested and evaluated my product and suggested three sensible improvements		6	
I have investigated how to join acrylic.		5	
I have used CAD/CAM to make my panels		4	
I have modelled my own terrarium from card		3	

Assessment for students

- Useful for peer evaluation.
- Clear assessment for students.

Possible assessment areas national curriculum

Designing skills	Clarification and communication skills	Aesthetic and sensory knowledge and understanding
Working and refining design brief Developing existing products Designing through exploring materials, Designing on paper modelling in card designing using CAD	Modelling Use of CAD Sketching on paper Use of google sketchup	Improving on prior knowledge of the built environment, Understanding of the role of architects.
Scientific and technological knowledge and understanding	Materials and processes	Influences and issues moral ,cultural historical environmental etc.
Using information from scientific testing on colour on growth to Utilising information on areas and tessellations from maths Structures	Using acrylic Understanding CAD /CAM (laser cutting) Investigation on adhesives and use of extrusions.	Understanding of how the development of growth can be improved with correct conditions.

Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6/7/8	Lesson 9
Starter Power point on buildings	Starter Using printed card students make a simple dome	Starter Shading shapes sheet	starter What would ? tornado	Starter What would ? snowflake	Starter jig angle problem	Starter Which is bigger?
Main lesson activity Geodesic dome	Main lesson activity Students use tessellations from maths to start their designs.	Main lesson activity Students sketch their designs on paper/ use google sketchup	Main lesson activity Students investigate the different adhesives and fixings for acrylic.	Main lesson activity Students use 2d design to draw out the shapes ready to import	Main lesson activity Students start to assemble terrarium focusing on jigs	Main lesson activity Assembling and evaluation of terrarium
plenary Who has the most successful dome and why?	plenary Using experimentation which was the most successful shape combination?	plenary How can we check our measurements are correct?	plenary How can we estimate how much material we use for joining our edges?	plenary How do we ensure the drawing is correct?	plenary Has the jig angle correct?	plenary How would you improve on your terrarium?
Risk assessment Med , use of scissors	Risk assessment Low , use of scissors	Risk assessment High possible use of scalpels, cutting mats numbered scalpels and demonstration on use compulsory. basicgraphic products also used.	Risk assessment High possible use of scalpels, cutting mats numbered scalpels and demonstration on use compulsory. basicgraphic products also used.	Risk assessment Low normal classroom rules apply	Risk assessment High use of epoxy resin	Risk assessment Low normal classroom rules apply
Afl Assessment opportunity Visual, photo of domes	Afl Assessment opportunity Visual– model Visual- tessellation	Afl Assessment opportunity Visual -sketching sheets visual –google sketchup saved in students area	Afl Assessment opportunity Visual– model	Afl Assessment opportunity Visual– CAD Physical –shapes from CAM	Afl Assessment opportunity Physical –terrarium	Afl Assessment opportunity Physical -terrarium
Differentiation Students can be aided with dowelling cut to size for measuring the straws All students will attempt but make a dome with some mistakes Most will complete dome Some will complete dome to a high quality.	Differentiation Students can be given more simple nets suitable for making into terrarium All complete net Most complete net to a high quality and use net. Some complete net to a good quality and use it to compliment own tessellations	Differentiation All complete 4 design ideas Most complete 6 design ideas Some complete 6 design ideas and justify.	Differentiation All make investigation Most make investigation and draw a single sensible decision Some make investigation and draw several sensible decisions	Differentiation All draw shapes Most draw shapes and check dimnensions. Some draw shapes and check dimnensions and model.	Differentiation All make jig Most make jig and measure correctly with help Some make jig and measure correctly without help	Differentiation All make terrarium Most make terrarium well Some make terrarium well and evaluate.
Objective	Objective	Objective	Objective	Objective	Objective	Objective
To understand the form of a geodesic dome.	To understand how shapes form in 3d	To understand how tessellations can be used in designing.	To investigate the properties and actions of adhesive's	To implement skills learnt with CAD.	To use mathematical theory in a practical way.	To complete terrarium and evaluate