Thames Sailing Barge Trust
Pudge Project
Upper Key Stage 2 Science: Forces
Water Resistance (approx. 40 mins + practical)

Activity sheet (Pairs or groups)

Boat Shape Investigation	Enquiry/Questions:			
Variables we kept the same:		Variables we changed:		
Variable change	Test 1	Test 2	Test 3	Overall Result
Flat front				
Triangular front				
Curved front				
Conclusion: Scientific Rationale				
Reflection				

Water Type Investigation	Enquiry/Question:	
Variables we kept the same:	Variables we changed:	
Variable change	Fresh Water	Salt Water
Number of _____ _____ held		
Conclusion: Scientific Rationale		
Reflection		

Sample answers

Boat Shape Investigation	Enquiry/Question: Which shape of boat experiences the least amount of water resistance?			
Variables we kept the same: blowing source, water tray, type and weight of material for boat		Variable we changed: Shape of boat		
Variable change	Test 1	Test 2	Test 3	Overall Result
Flat front	8.5 sec	9.3 sec	9.6 sec	9.3 sec
Triangular front	5.6 sec	5.5 sec	4.9 sec	5.6 sec
Curved front	6.0 sec	6.5 sec	6.1 sec	6.1 sec
Conclusion: Scientific Rationale	The TRIANGULAR front worked best because the water moves around this shape of boat with the smalles amount of resistance because it allows the water to flow more. It bashes less against the water as it moves through it, decreasing the water resistance.			
Reflection	We could change the shape of the hull under the water affect the water resistance			

Water Type Investigation	Enquiry/Question: Does a boat experience more or less upthrust in salty water?	
Variables we kept the same: Water temperature, volume of water, boat to hold/carry load		Variables we changed: Fresh or Salty water
Variable change	Fresh Water	Salt Water
Number of 1p coins/diennes cubes held	22	23
Conclusion: Scientific Rationale	Salt adds molecules to the water and so there is a greater density, creating upthrust. This gives boats more buoyancy.	
Reflection	We could make the boats to be more robust and try out how much weight each shape of boat could carry. Would bubbly water change the result? Or temperature of the water?	

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