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1.a) The nylon wheel is a good choice of material as it is self lubricating and will be very durable.

The galvanised mild steel wheel bearing is good as it will not corrode over time and gives good aesthetic properties.

Polypropylene handles are a good choice for the handles as they are chemical resistant and will be suitable to be manufactured in injection moulding process meaning it can be made in a mass production process.

The rubber tyre is a good use also as it will be exceptionally hard wearing.



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	The tubular mild steel frame will also be good as it has a very good strength to weight ratio.	
b.)	Metal extrusion would have been used in the manufacture of the tubular frame, this is a good method as it provides long uniform straight lengths of tube.	
	Injection molding can also be used in the manufacture of the handle of the second wheel barrow as this is a highly repeatable process which will produce a solid one piece product which will require no further finishing.	
	Piercing and blanking may also have been used for the manufacture of the metal	



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	Struts and trays as it will insure a high degree of dimensional accuracy.	
C)	Physiology is the study of how a person interacts with a product and how they use it. this means the <del>lightest</del> Polypropylene handles will be a consideration relating to comfort for the user as they also <del>have</del> will provide grip for the user.	
	Another Physiology Consideration that would influence the design would relate to weight of the product and how easy it is to push <del>with</del> while full, this consideration relates to the large wheel on the front and the width of that wheel.	

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	<p>Psychology is the study of how a customer looks at and feels about the product, one way both wheel burrows incorporate this idea is through their colour. They both use colour that is <del>exp</del> environment related and the brown also relates to reliability.</p>	
	<p>The handles on burrow <del>to</del> one (Whiskery Colapsible wheel burrow) also are a Psychology design feature as they both show the user how to use the product due to their shape and contrasts.</p>	
	<p>d) One functional issue <del>the</del> the wheateasy burrow address is storage and portability as it is collapsible and has handles for hanging up.</p>	



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Another functional issue is that both burrows are fit for purpose, this may seem obvious but both are designed to easily transport goods.

The Enclosure wheel burrow is designed to be hygienic and easy to clean due to its trays materials.

both are designed to be easy to use and manoeuvre on a construction site or garden due to their large, wide tyres.

The Enclosure wheel burrow is also very durable due to its design and material choice. This is a functional issue.

Also both wheel burrows have been designed for safety due to the lack of fraying tyres



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1.e)	The use of Standard Components is good as large quantities of materials can be bought in at a low cost taking advantage of economies of scale.
	This will also save the manufacturer hiring a highly skilled team of fabricators so will save money.
	The use of Standard Components will also ensure that production is efficient as no time is wasted on producing welds or nuts and bolts.
	Finally the use of Standard Components will ensure the product is easy for customers to maintain and can be used as a selling point for self assembly saving the manufacturer money again.



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2.		
a)	<p>Laminated wood is available in large sheets, the laminated wood will also be available with a range of veneers.</p>	
	<p>The laminated wood will also have a high strength due to its perpendicular lamination with grain structure.</p>	
	<p>The laminated wood will also be very cheap compared woods and it can be bent using steam bending as has been used in the chair.</p>	
b)	<p>Die Casting will produce high quality solid (one piece construction) parts with a good surface finish compared to sand casting.</p>	
	<p>Die Casting is also highly repeatable</p>	



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	and will produce many components with accuracy and all the same size.	
	C) The use of Jigs and templates while making the plywood sections would ensure all parts are cut quickly and no measuring has to be done this would speed up the process.	
	The use of CAD and CNC Technology will also result in a higher quality end product as they cut faster and more accurately than doing work by hand.	
	Finally the use of Jit Stock Control will ensure production is extra efficient as it means money isn't tied up in stock and reduce wast products as well as a Gantt chart.	



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3.a)	it will produce a hollow product so	
	the product can be moved easily as	
	it is a child's product.	
	It will provide a good surface finish	
	with little / none further finishing needed	
	The rotational moulding is also very accurate	
	and repeatable so is suitable for mass manufacture.	
b).	<del>Polypropylene</del> polypropylene is a good use of	
	a material as it is very durable so	
	will withstand continuous use from a child	
	and will be chemical resistant so a child	
	may play with the product in an outdoor	
	environment. it is also available in a range of colours.	
c).	With large rotational moulding, in plant setting	
	is a must as the heat and dust that way	



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	also be present must be addressed.	
	The material choice is also a important factor in the design as the material must also be <del>available</del> non toxic and finishes used must be the same especially for this product as it is to be used by children. the material must also be hygienic and easy to clean.	
	d.)	
	The product must be made of a material that is easy to recycle such as <del>thermo</del> using thermoplastics instead of thermosetting plastics.	
	The designers could also try to reuse materials such as how lots of products are now made from things such as old car	



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tyres.

by the designer considering the energy used they may choose to use things such as solar panels on their product or friction generates similar to wind up torches.

The designer will also reduce their waste as many companies who use ~~peising~~ peising and blanking will melt down and reuse their scrap.

4.a) The target market (builders) need their tools to be robust so this radio has what looks to be a black metal frame to ensure it is durable and long lasting.

Also the product has a secondary function



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	of being <del>the</del> cable to charge batteries for tools	
	this is <del>the</del> need for a builder as he will	
	need a charger to ensure his tools will	
	last the day.	
	Also the fact the item is portable has	
	been influenced by the target market <del>and</del>	
	the handle means it can be disassembled	
	easily.	
	b). The size of the control buttons	
	will be designed for the 95th percentile of	
	finger tip size so it can be easily operated	
	by all builders.	
	The width of the handle will again	
	be designed for the width of the 95th	
	user so it can be <del>operated</del> <del>used</del> comfortably	



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	<p>b) Carried by all.</p>	
	<p>c) User trials could be used this would mean giving the product to some workers and then gaining their opinion on the product.</p>	
	<p>d) Customer loyalty can be built up around a strong brand image.</p>	
	<p>A Higher price can be charged for a branded product especially a strong brand like Dewalt.</p>	
	<p>5.a) The use of a user trial with a prototype.</p>	
	<p>The use of a Customer Survey about the product.</p>	



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b)	One disadvantage of using an external designer is that they will operate at a high cost and it will involve disclosure of information.
	One Advantage of an external designer is it will mean the work will be completed to a very high standard as this designer will be a professional.
c).	One idea generation technique that can be used is SCAMPER this is when a designer Substitutes, Combines, Adapts, Modifies, Puts to another use, Eliminates and rethinks existing designs to come up with totally new ideas.
	Thought shows may also be used as this is when designers meet up and say



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	exactly what they are thinking and connect	
	and come up with ideas between them.	
6.	The Colour used in many products is a	
	very good Aesthetic property that will effect	
	certain aspects of designs for example the	
	colour of buttons on a TV remote.	
	The overall shape and form of a product	
	is a very important design factor an example	
	of this is the shape of cars and how	
	this makes them appealing and look "cool".	
	Contrast is another use of Aesthetics in a	
	product as it will show certain parts pop out	
	at us for example clock faces being	
	white with black writing.	



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Also proportions are an important Aesthetic factor and this insure a product looks good and is functional e.g. the size of Chess pieces pawns being the smallest and King being the biggest.

Finally the patterns used in products contribute to ~~the~~ their overall appeal for example the Checkers on a chess board.

