

GCSE in Manufacturing (Double Award).

Unit 1: Designing Products for Manufacture (Textiles)



Proposed marks for Unit 1 - Textiles

		Allocated mark	Location of evidence
a1 produce a design specification from a given design brief. 0 1 2 3	a2 produce a detailed design specification, using customer feedback and associated information. 4 5 6	7 8 9	Page 1 shows a customer design brief and specification. Further information is gathered relevant to the project on pages 2, 3 and 4. These findings should have been reported back to the customer and a revised design brief with key issues produced.
b1 use their design specification to produce ideas for a design solution. 0 1 2 3	b2 explain the use of their design specification in developing ideas for their final design solution. 4 5	6 7	Pages 5 shows a range of images that may be appropriate to be used for the logo, a brief evaluation is given of these ideas. Pages 6, 7 and 8 feature a range of ideas for the bag and the notes give a good indication of suitable materials and features of the designs. Page 8 also contains notes regarding which ideas may be taken further.
c1 identify health and safety issues that may arise in making their product. 0 1 2 3 4	c2 identify the quality control procedures that would be used in each stage of making their product. 5 6 7	8 9	Health and safety issues are identified on page 9 but these are rather general and should be more direct to the product. A production plan (page 10) identifies the stages of making and a variety of checks that will be carried out on the product. Page 11 covers quality control aspects and does raise issues concerned with the product but it still could be developed in more depth.
d1 use diagrams, sketches and other appropriate methods to present their design solution to the customer. 0 1 2 3 4 5	d2 use diagrams, sketches and other appropriate methods, including modelling, to explain their design solution to the customer. 6 7 8	9 10	Pages 12, 13 and 14 develop the ideas from page 8 and give production details. Pages 15, 16 and 17 highlight a range of techniques that have been carried out. Colour schemes are developed from page 15 onto page 16 and a brief evaluation is given. Page 17 explains basic thoughts regarding designs and how fastenings could be used. Sample bags have been modelled to present to the customer but this could have been done in the form of presentation boards which would have saved on time and the use of materials.
e1 identify the manufacturing processes that would be used to produce their product in quantity. 0 1 2 3 4 5 6 7	e2 identify the stages and associated quality assurances that will be used to manufacture their product. 8 9 10 11	12 13 14 15	Suitable processes have been identified on pages 19 to 21 that could be used to produce the product in quantity, however these are rather general and need to be developed further with reasons given for selecting a particular manufacturing process. Quality standards are mentioned on page 21 but once again these are very basic and need to be expanded.
Total mark		35	

CUSTOMER DESIGN BRIEF

Seazone is a centre which people can visit and look at a variety of sea life from regional offshore fish to a range of more rare breeds from other parts of the world. As well as having many viewing areas on the premises it also has an education room, which can be booked by schools and other similar groups. A restaurant and shop are also on the site. The shop is well stocked with many different items including small gifts, books and many other items.

New items are always required by the shop which will help to promote the Centre as well as proving to be a useful item for the customer. Seazone would like a new range of bags to be produced that could be sold in the shop and would feature images that are in harmony with its theme. The bags should appeal to a range of people and should be available at a price that is suitable to all pockets.

Key features of the design brief

The bag style should appeal to variety of people.
The image used on the bag should follow the Seazone theme.
Cost of the item should be within the budget of all age groups.

SPECIFICATION

- The bag should be big enough to hold a range of items while shopping or when going on a visit.
- The seams should be strong enough so that they will not split when the bag is loaded.
- Suitable material should be used that will stand up to different weather conditions.
- A method of carrying the bag should be incorporated into the design this could include - straps, handles or a drawstring.
- The bag should include an image that will reflect the Seazone theme.
- Colours used for the bag and the image should complement each other.
- The bag should be lightweight prior to loading, as items are heavy enough to carry around without the bag also contributing.
- The bag should be quite fashionable as this will encourage people to buy it.
- The bag should fold up for easy storage when not in use.
- The price of the bag should be kept as low as possible in order that it will

1

To find out what people want from a bag I am going to carry out a survey.

- Do you use a bag?

Yes	
No	
- When do you use a bag most?

Shopping	
Going to a leisure centre	
On a visit	
Night out	
Other	
- Is it important that the bag is light weight for carrying?

Yes	
No	
- What material would you prefer a bag to be made from?

Cotton	
Nylon	
Card	
Other	
- Would you buy a bag with a sea image on it?

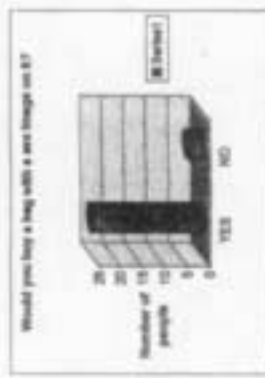
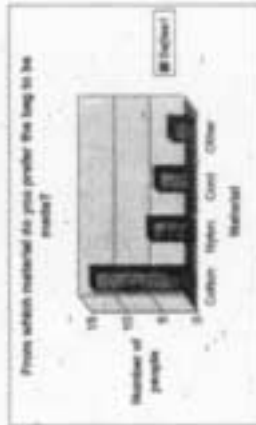
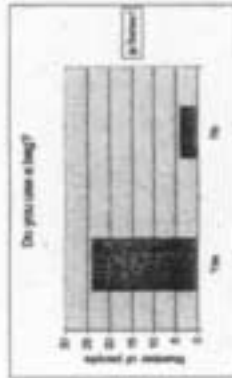
Yes	
No	
- What image would you prefer?

Fish	
Dolphin	
Shells	
Other	

RESULTS OF SURVEY

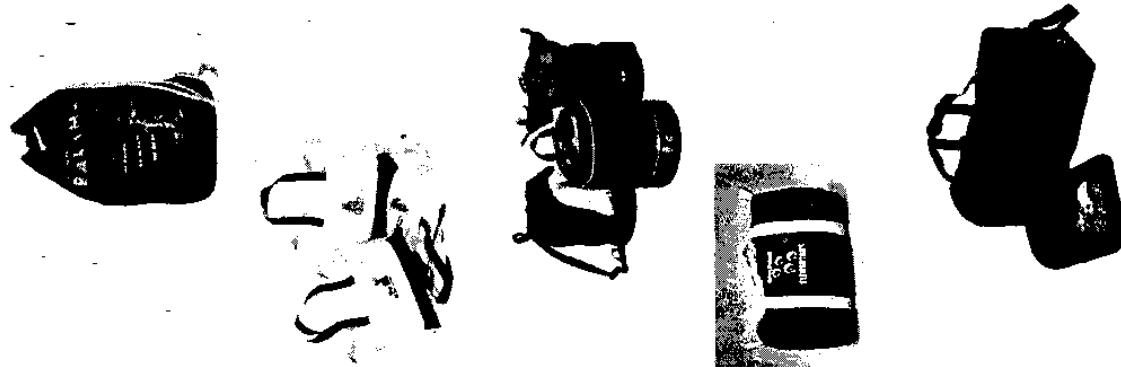
I carried out my survey by asking 28 people their opinions. The people that I asked covered a wide age range and included some of my friends at school, my neighbours and other people.

The results from my survey are shown below.



From my survey I have found that the majority of people asked do use bags and that this happens most when they go shopping. The people questioned also felt that it was important for the bag to be light in weight, with cotton proving to be the most popular material for it to be made from. People appeared to favour a sea image on the bag with fish and dolphins being recorded as the most popular shapes to be a used.

EVALUATING EXISTING PRODUCTS



Bag description	Size	Shape	Strength for purpose	Quality	Material or fabric used	Comments
Beach bag	30 x 20 cms.	Duffie	Heavy duty canvas	Good	Brushed cotton.	Embroidered front with internal mesh to hot swimwear.
Tote bag	45 x 30 x 17 cm	Rectangle	Extra strong with hand and shoulder straps.	Very good	Cotton, canvas.	Waterproof, with hook and loop closure. Internal pocket.
Bucket bag	45 x 27 x 27 cm	Cylinder	Extra features to enhance strength	Good	Nylon with coloured mesh trim.	Zip fastening separate area for wet or dry articles.
Barrel bag	33 x 18 cm	Cylinder	Lightweight but sharp items could tear sides.	Quite good	Coated nylon	Zip fastening reinforced handles. Folds small.
Duffel sports bag	25 x 60 x 30 cm.	Rectangle	as barrel bag	Quite good	Nylon	Zip fastening, folds down to fit into a small pouch. Velcro and zip pockets removable shoulder strap.

Analysis	Who will use it ?	What will it have to stand up to?	Qualities needed	Suggested material or fabric
Who will use it ? Adults, families, children	Heavy items. Thrown around. Weather conditions.	Heavy items. Thrown around. Weather conditions.	Strength, hardwearing. Colourful.	Cotton, calico, polyester, Hessian, nylon.
Why will it be used? To store items e.g. beach towels, shopping, food, swimming items.	Sunlight, water/liquids, books, sharp items.	Sunlight, water/liquids, books, sharp items.	Fade resistant colouring, waterproof, strong materials and handles.	
Where will the bag be used? Shops, leisure centre, beach, on holiday.	Wet items, sand, sea, sun cream.	Wet items, sand, sea, sun cream.	Waterproof.	
When will it be used? In the Summer, at weekends, for school, going out for the day.	Heavy weights, sunlight, water.	Heavy weights, sunlight, water.	Strength, hard wearing. waterproof.	
How will it be used? To be carried over the shoulder, on your back, or carried using handles	Heavy objects, drinks, food boxes, books.	Heavy objects, drinks, food boxes, books.	Strong straps, good seams to support handles.	

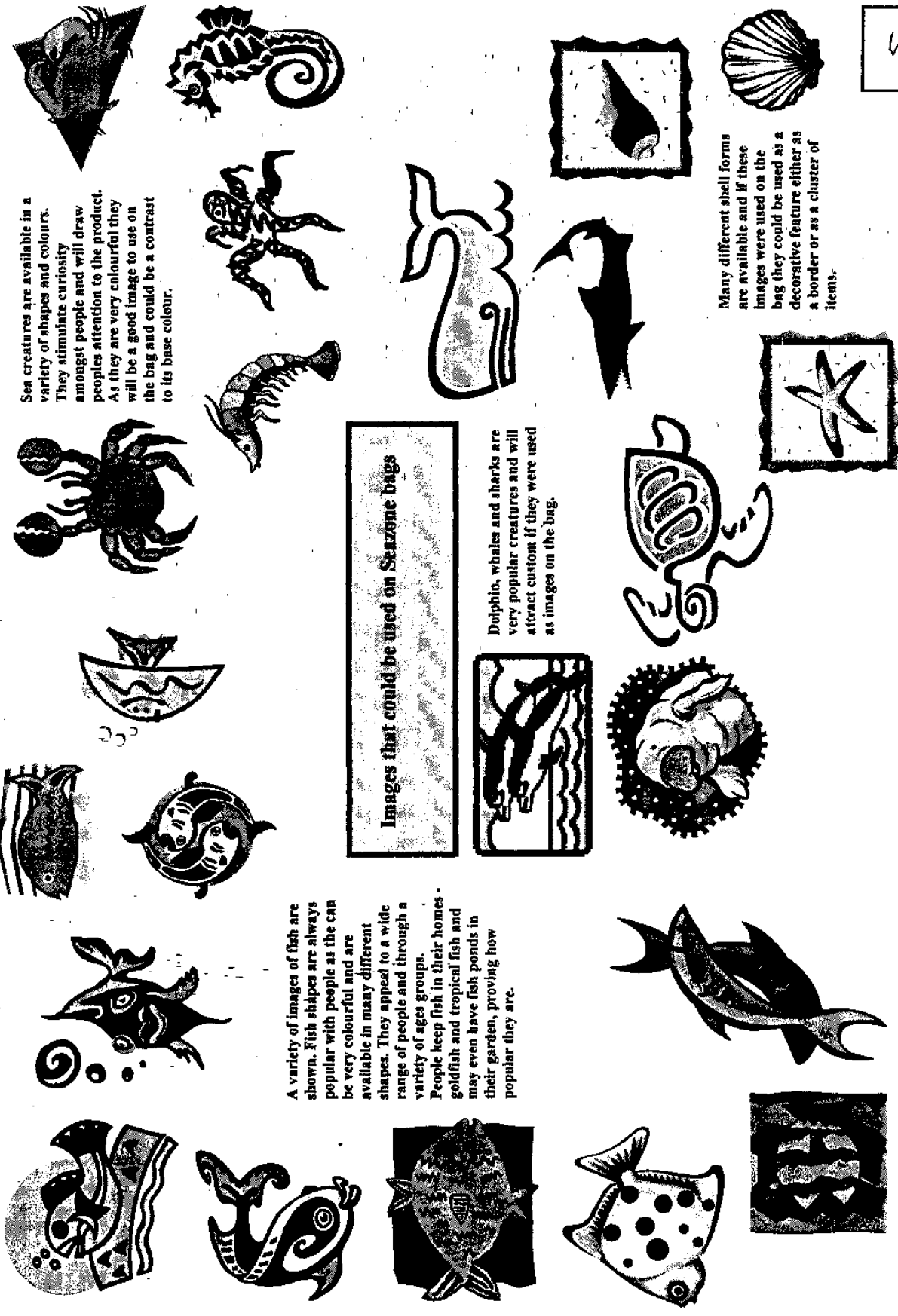
Sea creatures are available in a variety of shapes and colours. They stimulate curiosity amongst people and will draw peoples attention to the product. As they are very colourful they will be a good image to use on the bag and could be a contrast to its base colour.

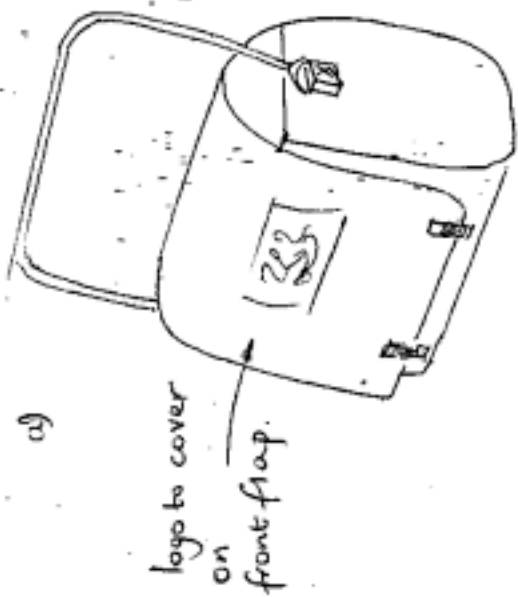
Many different shell forms are available and if these images were used on the bag they could be used as a decorative feature either as a border or as a cluster of items.

Images that could be used on Seazone bags

Dolphin, whales and sharks are very popular creatures and will attract custom if they were used as images on the bag.

A variety of images of fish are shown. Fish shapes are always popular with people as the can be very colourful and are available in many different shapes. They appeal to a wide range of people and through a variety of ages groups. People keep fish in their homes - goldfish and tropical fish and may even have fish ponds in their garden, proving how popular they are.

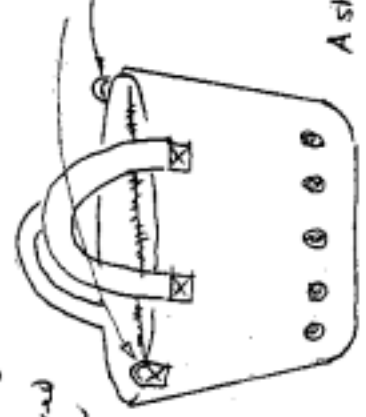




a)

logo to cover on front flap.

FABRIC - NYLON FASTENING - TWO PLASTIC BUCKLES BAG IS CARRIED USING THE SHOULDER STRAP.



b)

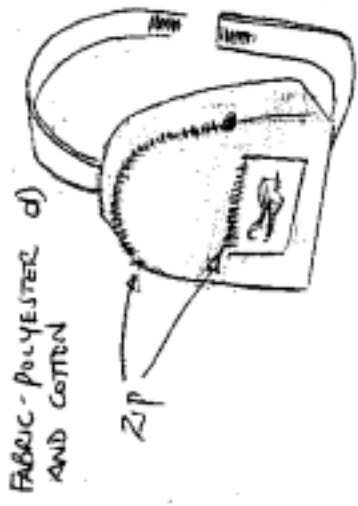
FABRIC - PVC COVERED POLYESTER

ZIP FASTENING

hooks for shoulder strap.

A shoulder strap could be used to carry this bag or it could be carried with the two handles.

LOGO REPEATED AT REGULAR SPACES AROUND THE BOTTOM.



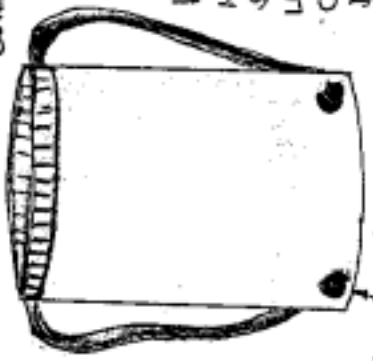
FABRIC - POLYESTER AND COTTON

ZIP

LOGO WILL GO ON THE POCKET WHICH HAS A ZIP AT THE TOP. THE MAIN BAG IS SEALED USING A ZIP AROUND THE TOP. THE BAG CAN BE CARRIED ON THE SHOULDER USING A TWO PIECE STRAP THAT JOINS USING VELCRO.

FABRIC - NYLON OR PVC COVERED POLYESTER

FASTENING - DRAW STRINGS

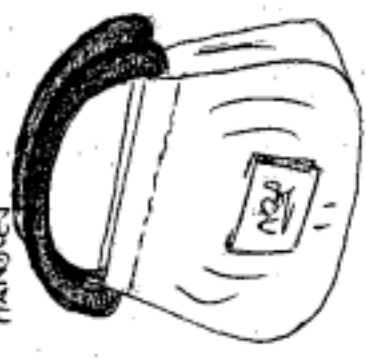


c)

WHEN THE STRAP IS PULLED THE STRING WILL LENGTHEN BY DRAWING THE STRING WILL ACT AS SHOULDER STRAPS.

BRASS EYELETS FOR STRINGS TO FIT THROUGH - TO ADD STRENGTH AND PREVENT RUSTING

e) FABRIC - COTTON CARRIED USING TWO PLASTIC HANDLES

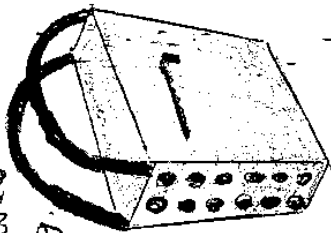


OPEN POCKET ON THE FRONT OF THE BAG THAT HAS THE LOGO DESIGN ADDED TO IT.

6

f) FABRIC - COTTON

Two straps are used to carry the bag, with a hip pocket on the front.

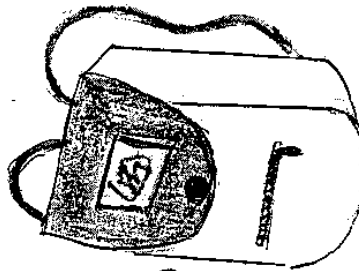


logo to be repeated down the side.

g)

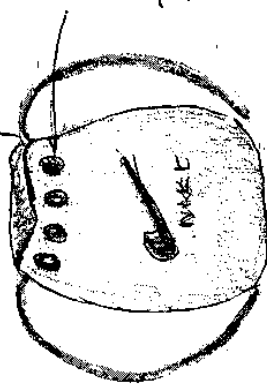
fabric - NYLON

fastening - press stud on an opening flap and hip pocket on the front.



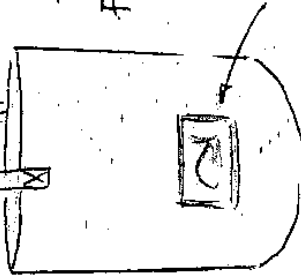
logo to go on the front flap.

h) Rip-stop nylon fabric. Bag has two shoulder straps.



logo to be repeated around the top of the bag.

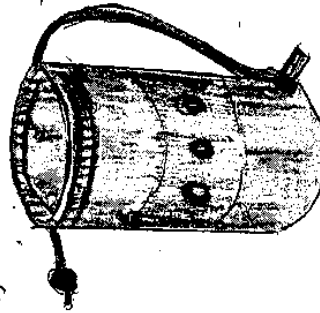
j)



FABRIC - COTTON
FASTENING - STRAP ATTACHED TO BOTH SIDES.

logo could go onto the front or back or both.

i)



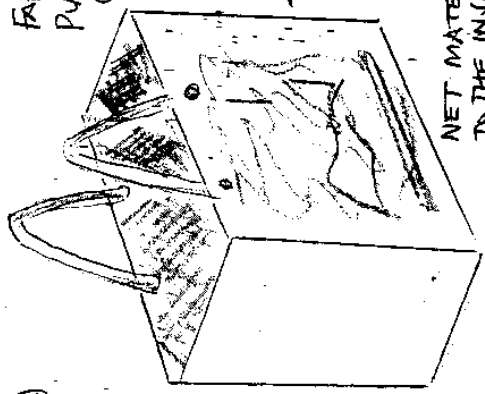
FABRIC - Rip stop nylon with a shoulder strap. Cylinder shape and drawstring top.

7

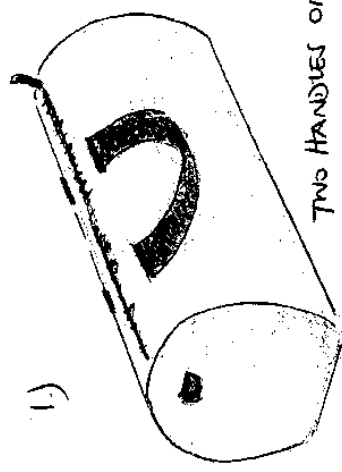
FABRIC - SEE THROUGH
 PLASTIC WITH TWO
 COORD HANDLES TO
 CARRY.

OPEN STYLE - WITH
 NO EXTRA FASTENINGS.
 THE IMAGE COVERS THE
 WHOLE OF THE FRONT
 OF THE BAG.

NET MATERIAL WILL BE ADDED
 TO THE INSIDE OF THE BAG TO
 STOP OTHERS EASILY SEEING THE
 CONTENTS.



ROLL-BAG MADE
 FROM POLYESTER
 WITH A ZIP TOP
 FASTENING.



TWO HANDLES ON THE SIDE CAN
 BE WIED TO CARRY THE BAG
 OR A STRAP COULD BE ADDED
 TO THE HOOKS AT THE ENDS OF THE
 BAG IN ORDER FOR IT TO BE
 CARRIED OVER THE SHOULDER.

IDEAS TO DEVELOP FURTHER

IDEA B. TOTE TYPE BAG.

I selected this idea as it is a popular shape and can be used for a variety of occasions. The handles are strong and shoulder straps can be added. The zip top pockets protect the contents.

IDEA E. BAG WITH PLASTIC HANDLES.

This bag is a good shape and has the benefit of the extra storage space due to the fact that it has a front pocket. The plastic handles are added to form a colour contrast to the fabric used for the body of the bag.

IDEA I. DUFFLE BAG.

I selected this shape as these bags are always very popular with all age groups. They tend to be lighter to carry and can be easily stored. The bag can easily be carried by hand as well as over the shoulder. An extra-pocket could be added to the outside if required.

Health and Safety Issues in Textiles Industry

Hazard

When sewing

Finger or hand injury during cleaning or repair work.

Eye injury from broken parts.

Finger injury from needle.

Injury from other equipment.

Stain removal

Health hazard from vapour given off.

General work area.

Tripping and falling.

Injury from swallowing items.

Electrical injury.

Pressing

Scalding from steam.

Finger and hand injuries from the press.

Safety Precautions

Make sure that the machine is switched off and the plug removed. The machine must be stationary before any cleaning or repair work is started.

Wear safety glasses and ensure that the eye guard is correctly positioned before commencing work.

Make sure the finger guard is in the correct place before commencing work.

Scissors and needles should be put away after use.

Ventilation must be good in that area and if possible extractor fans should be fitted.

Keep area clean and tidy.

Never place items such as needles in your mouth.

Make sure that the machine and its cable are in good working order.

Steam must not be supplied until the press has been closed.

Only one person should operate the press and once the press has started to close hands should be kept out of the way. Safety bars should be fitted.

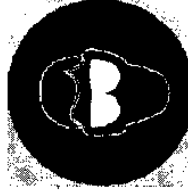
It is the duty and legal obligation of every employer to care for the Health and Safety of their employees. All machines should be made as safe as possible and any hazards should be clearly labelled.

There are three important aspects to Health and Safety:

Safe and correct use and storage of all equipment.

Safe use of all dyes, fabric paints, glues and other chemical products that may give off fumes and dust.

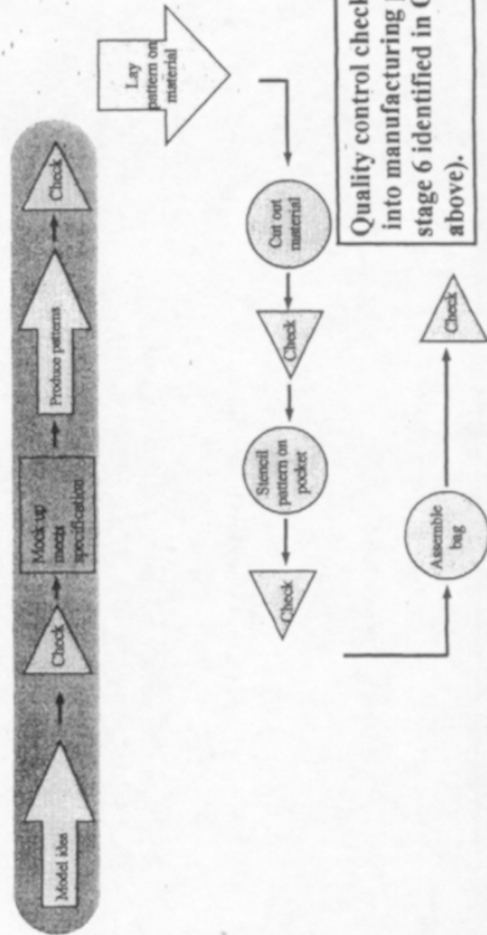
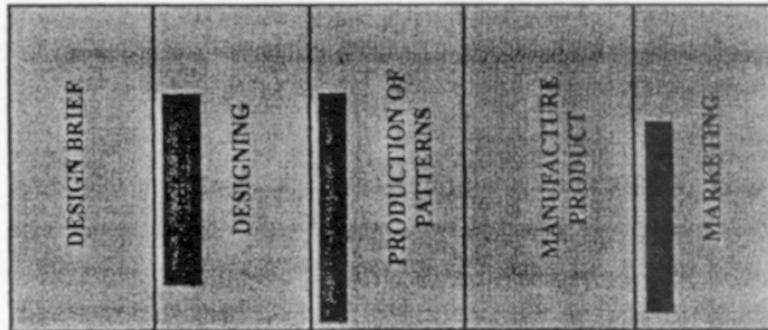
Assessment of all textile products that are designed.



Production Planning

Process	Dept.	Month											
		Date											
1 Customer design brief	Design												
2 Research into customer needs	Market												
3 Produce design idea	Design												
4 Customer feedback on idea	Market												
5 Select best idea	Market/Design												
6 Model idea	Design												
7 Produce a pattern for body of bag	Design												
8 Make up bag and overlock seam	Production												
9 Make pattern for pocket	Design												
10 Stencil pattern onto material for pocket	Production												
11 Stitch pocket onto bag	Production												
12 Check length required for straps	Design												
13 Produce pattern for straps	Design												
14 Make straps	Production												
15 Join straps to bag	Production												

THE DESIGN PROCESS



QUALITY GUARANTEE

The product must be of a quality that the customer expects and must work as the customer desires. The manufacturing company has an obligation to meet these requirements when it produces its product. By doing so the company will have success selling the product and increase its reputation with its customers.

TOTAL QUALITY MANAGEMENT - is when the manufacturing an aim to achieve continuous improvement, trying to continually improve the performance of its organisation and its products and services. The research and marketing sections of the company have an important role to play here as they need to know what the customers requirements are and how they feel about new products as they develop.

QUALITY ASSURANCE

Is carried out by the company to see that the product meets the quality standards set.

A series of planned actions and procedures will set up to check the product before, during and after manufacturing operations have taken place. The aim of the process is to prevent failure and to make sure that quality of the product is right first time and every time.

QUALITY CONTROL

Follows the quality assurance process and is used to set up ways of checking quality against the set standards or to see that items have been made within set tolerances. It involves using an inspection team who are looking for items that are not up to standard. Inspections will take place at identified stages in manufacturing as well as after the final item has been assembled.

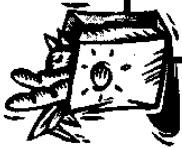
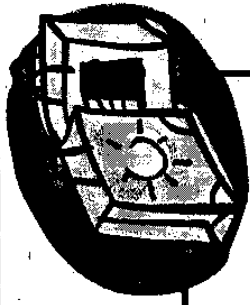
Quality assurance and my product.

When manufacturing my product I will need to carefully select the correct materials and processes. As the project is going to be used to promote the Seazone centre it is important that it is of a high quality as any faults will be passed on by word of mouth and it will harm the reputation of the centre.

As the bag is going to be used to promote the Centre and will be carried around in many places and in many different areas of the country it is important that it looks good and people want to use it.

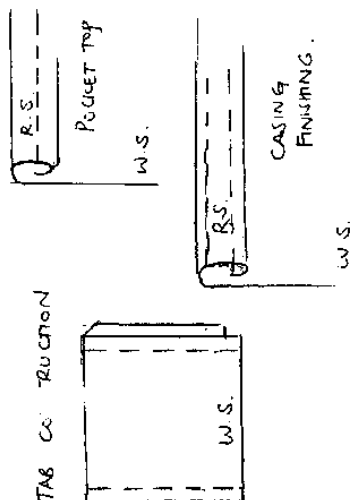
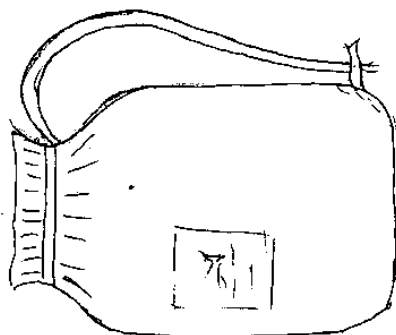
The amount of items that can be carried needs to be reviewed and the weight of items that it can carry without breaking needs to be checked. It is vital that seams are strong and that the handles are securely fastened in position.

The selection of hard wearing and durable materials is very important as the bag will hold many different items of all shapes, sizes and textures and these items will rub against the inside of it. Similarly when the bag is being carried or stored people and objects will rub against it. Different weather conditions will be experienced from bright sun light through to wet conditions including snow and rain, it is therefore important that printing methods used to add the design feature are such that they will withstand all the different that conditions the bag will experience.



IDEA No. 1

DUFFLE TYPE BAG



CONSTRUCTION DETAILS

All seams 1.5cm wide Neaten after pressing with overlocking machine.

1. Fold tab widthways and stitch sides. Turn and press.
2. Place eyelet and secure.
3. Stencil design onto pocket piece. Dry and fix.
4. Turn top hem on pocket 1cm then 2 cm machine in place.
5. Turn side hems and press.
6. Place eyelets where marked on main piece top.
7. Secure tab where marked.
8. Tack base together.
9. Join seam.
10. Secure base evenly in place.
11. Make casing at the top - turn 1cm then 2.5 machine top and bottom.

FABRICS and COMPONENTS

Cotton calico.

- Cotton cord for drawstring.
- Polyester thread to match fabric.
- 3 x 6-8 eyelets.
- Stencil brush and printing dye.

STITCH DETAILS

Plain seam - stitch width 0
stitch length 3

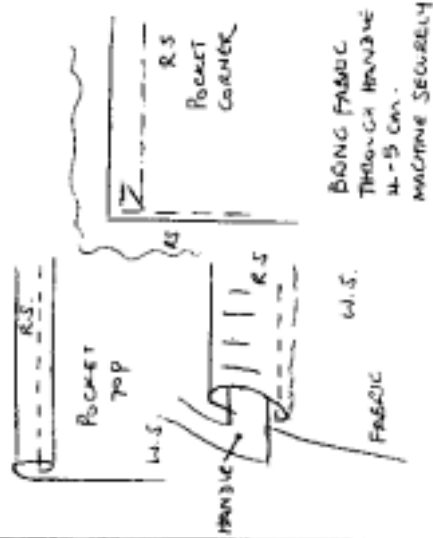
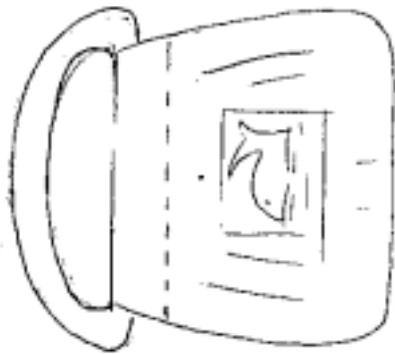
Overlock - stitch length 3
4 threads

Chosen embroidery stitch may be used to secure pocket.

CARE LABEL

IDEA No. 2

BAG WITH PLASTIC HANDLES



CONSTRUCTION DETAILS

All seams 1.5cm wide Neaten after pressing with overlocking machine.

1. Place design on pocket.
2. Turn top hem on pocket as diagram and sew in place.
3. Attach pocket to the front of the bag (see diagram).
4. Sew sides seams of bag and neaten.
5. Sew bottom seam and neaten.
6. Thread fabric around handle to wrong side.
7. Machine in place using machine stitch or embroidery stitch.

FABRICS and COMPONENTS

Cotton calico.

1 set of plastic handles

Polyester thread to match fabric.

STITCH DETAILS

Plain seam - stitch width 0
stitch length 3

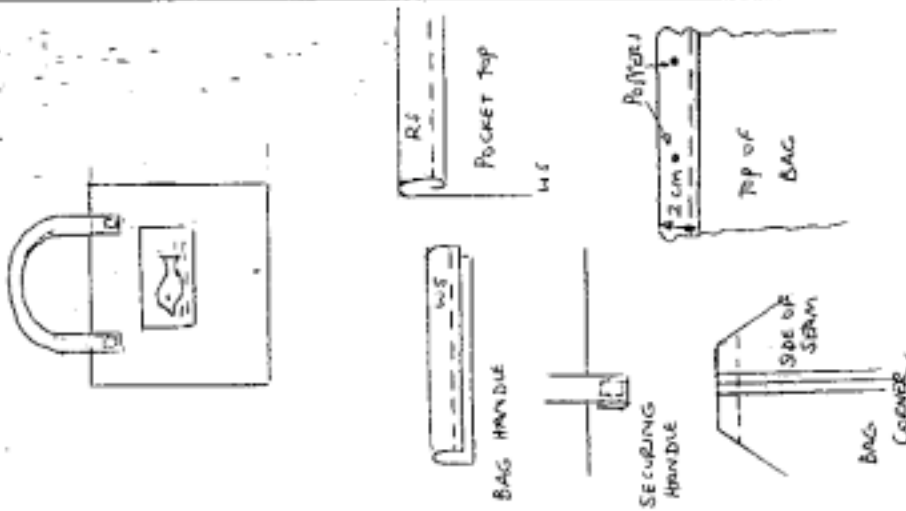
Overlock - stitch length 3
4 threads

Chosen embroidery stitch may be used to secure pocket and handles in place.

CARE LABEL

IDEA No. 3

TOTE TYPE BAG



CONSTRUCTION DETAILS

All seams 1.5cm wide Neaten after pressing with overlocking machine.

1. Fold bag handles along length, machine, press hand turn.
2. Stencil design on pocket dry and fix.
3. Top hem on pocket, 1cm and then 2 cm.
4. Secure pocket in place on front of bag.
5. Turn top hem on back and front of bag 1cm then 2 cm.
6. Place handles over marked position, turn under edges, machine securely in place.
7. Join side seams and base seam. Neaten and press.
8. Sew corners.
9. Attach three popper fastenings evenly along top opening.

FABRICS and COMPONENTS

Cotton calico.

Polyester thread to match fabric.

3 popper snaps.

Stencil, brush, printed dye.

STITCH DETAILS

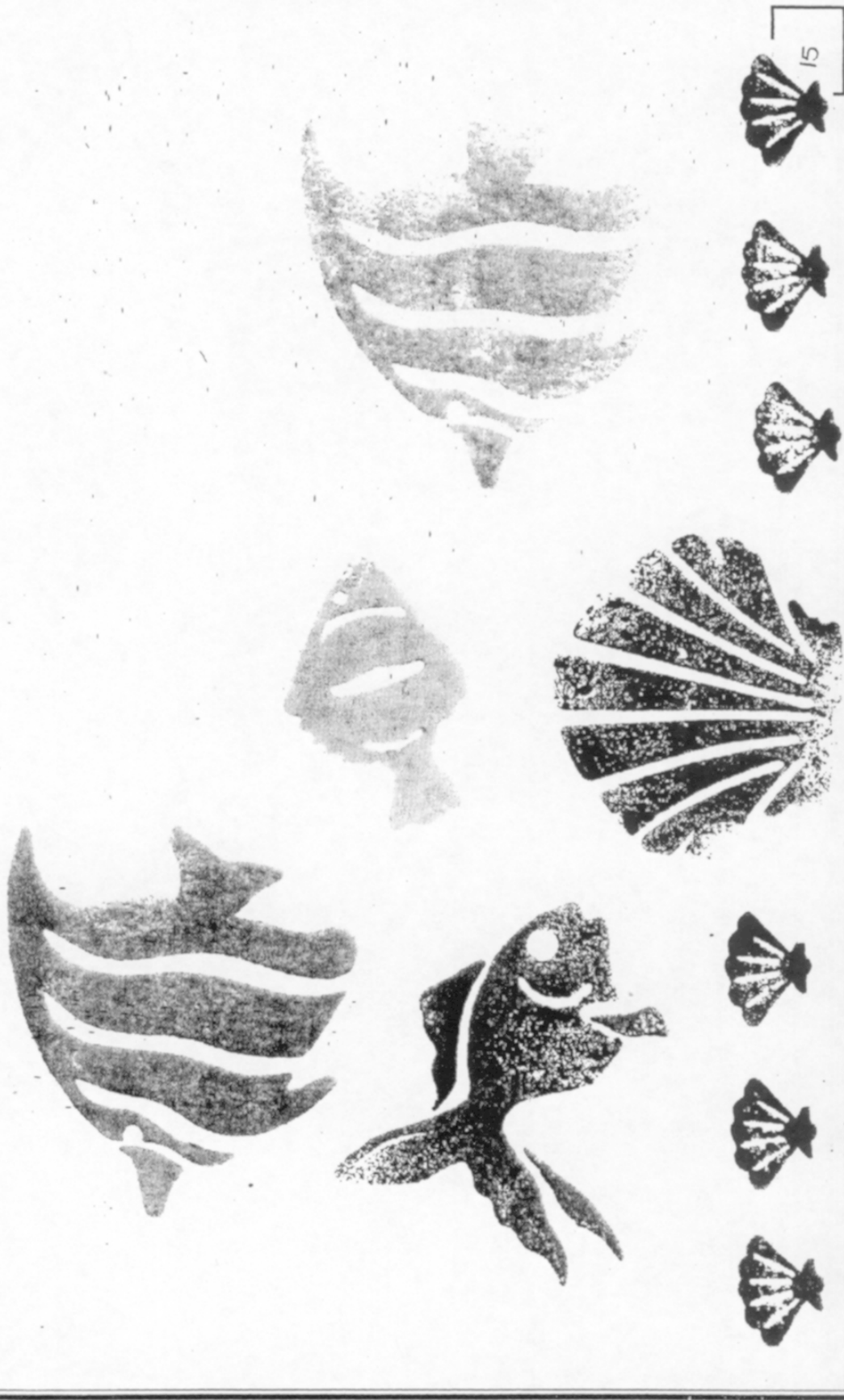
Plain seam - stitch width 0
stitch length 3

Overlock - stitch length 3
4 threads

Chosen embroidery stitch may be used to secure pocket.

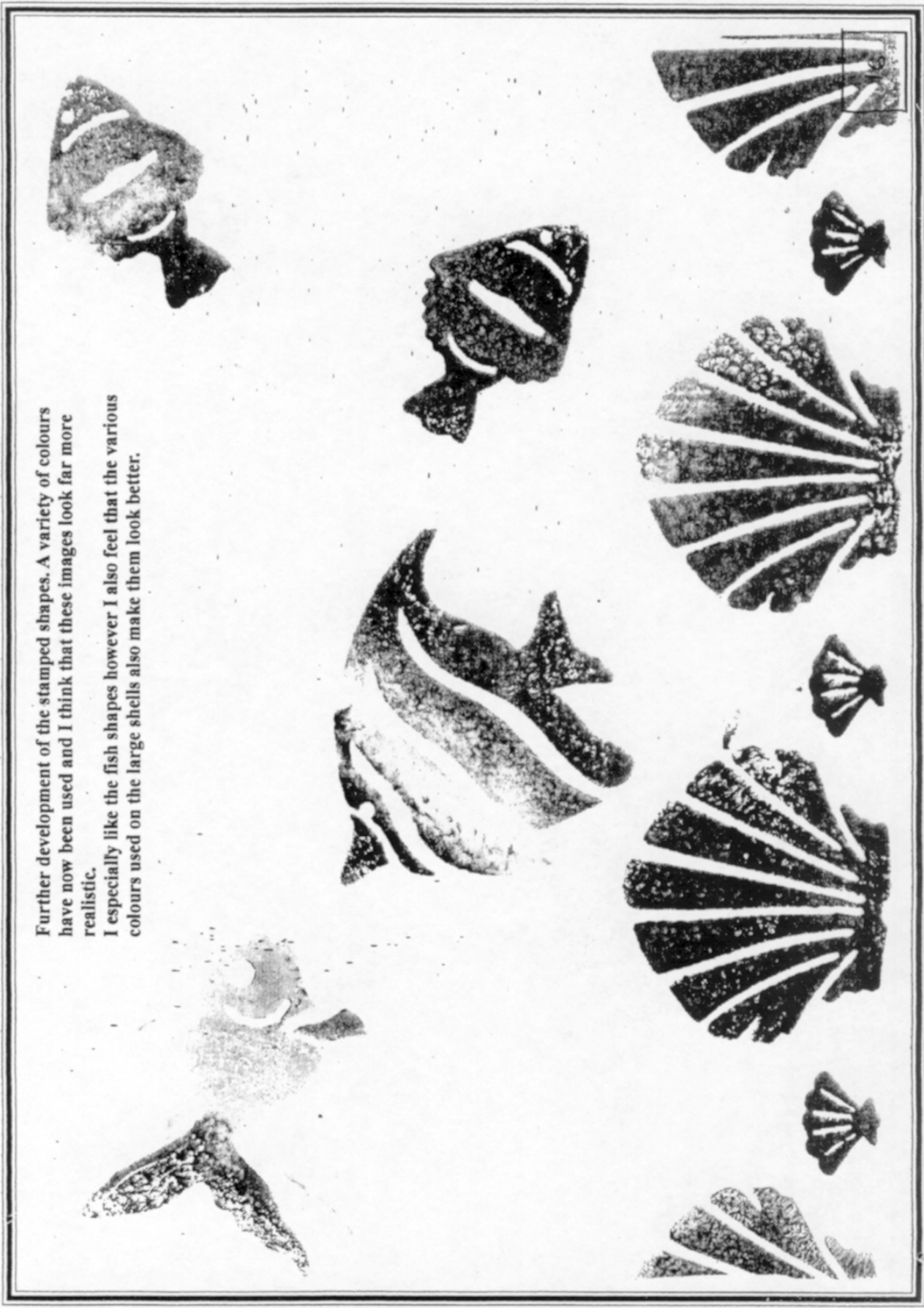
CARE LABEL

Sample stamps to show images of sea life creatures.
The colours used on this page could possibly be seen in an aquarium
containing tropical fish but I think that the images would be better if a
second colour was added.



Further development of the stamped shapes. A variety of colours have now been used and I think that these images look far more realistic.

I especially like the fish shapes however I also feel that the various colours used on the large shells also make them look better.



SAMPLE DESIGNS

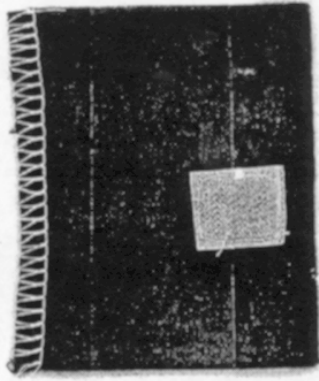
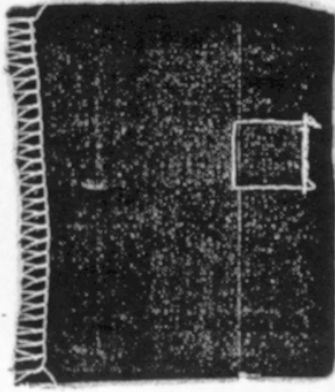
I have used the embroidery machine to produce a range of sample sea life images.

I like the colours that I have used on all of the creatures as I have tried to use the colours that they will be in real life. Of all the images I like the dolphin best as this is my favourite sea animal and I like the colour and shape of this image. I am sure that other people will also like this choice.

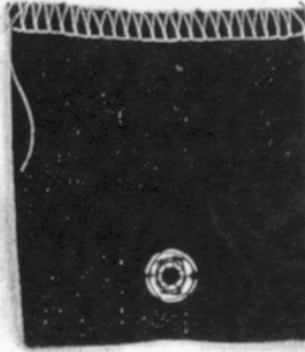
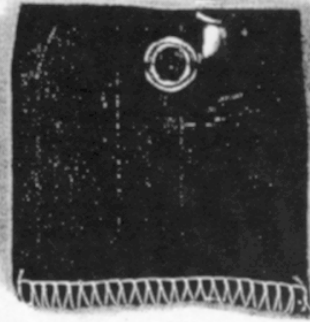


SAMPLE FASTENINGS

Velcro - Quite strong, easy to fit and does not take up a lot of space or stick out.



Press stud - the popper will be suitable for my bag and could be used in quite a few positions (to close the bag or on the pocket). It does tend to stick out but could be covered in a contrasting material to make it a feature of the bag.



Eyelet - could be used to strengthen areas when a shoulder strap is being added.



SAMPLE BAGS

The bags below have been made as mock ups to show the customer what could be manufactured.

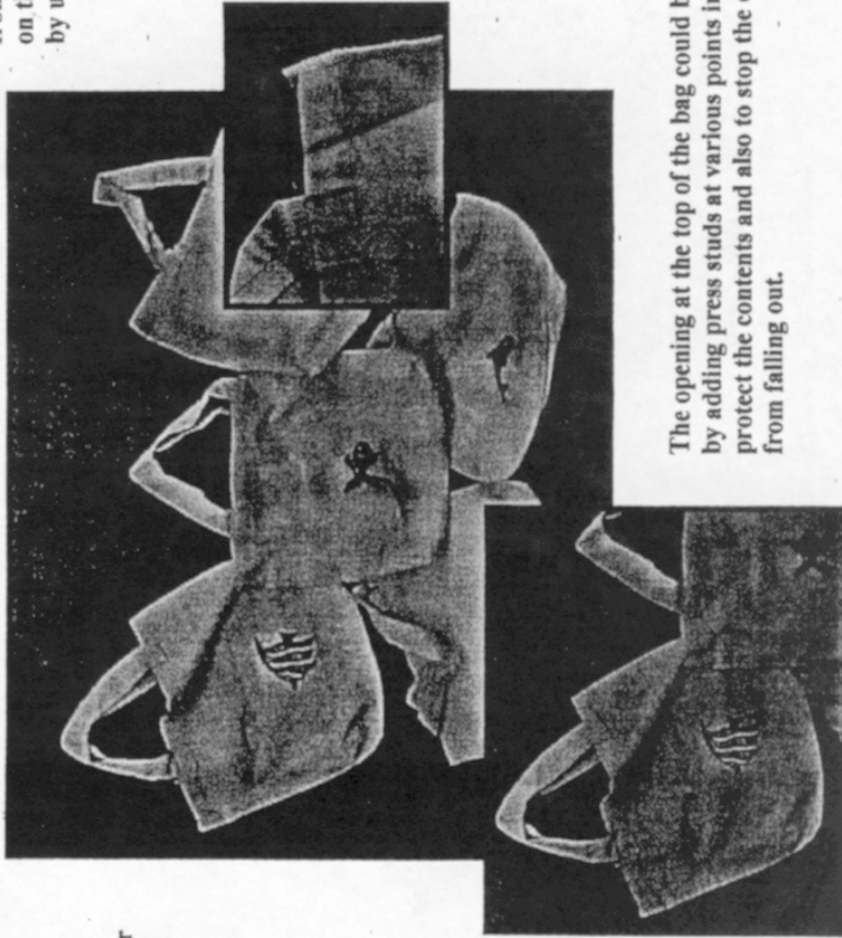
A variety of different shapes can be stencilled or stamped onto the pocket. The design could also be available in a range of different colours.

The pocket on the front of the bag could have a double layer of stitching for extra strength, however this may be rather excessive and time consuming considering the size of the pocket in relation to the bag. Press studs or velcro fastening may be included at the top of the pocket for extra security.

The bags have been manufactured from cotton calico. With the pattern on the front pocket been produced by using a stamp and coloured dye.

The seams have been overlocked to increase the strength and neaten them.

The seams on handle have been turned through to add to the appearance and when attached to the bag extra stitching has been used once again to increase its strength.



The opening at the top of the bag could be improved by adding press studs at various points in order to protect the contents and also to stop the contents from falling out.



Manufacturing the bag.

The selected idea will be designed similar to a tote type bag.

It will consist of a front pocket containing the selected logo for Seazone and shoulder straps.

The material selected for the product will be cotton calico, as it is fairly cheap and a good material to work with.



The image to go onto the pocket will be stamped onto the material to be used for the pocket, given time to dry and will then be attached to the bag.



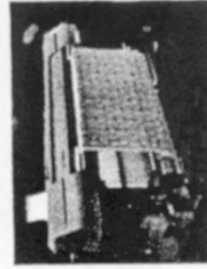
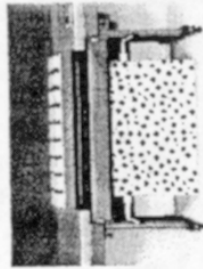
The straps will be attached to the top edge of the bag. Double stitching will be used for extra strength.

All the seams on the bag will be strengthened in order to ensure that the bag will last as long as possible when it is sold and used by the customer.

PRODUCING MY PRODUCT IN QUANTITY

DIGITAL PRINTING -

Three machines to carry out the process are shown below.



If the bag was produced in quantity placing the image onto the pocket by stamping or stencilling would take far too long and therefore other processes would have to be considered which would be more efficient, ensure quality and be a lot less time consuming. Screen printing and digital imaging are two processes that could be considered. Digital printing may be the preferred option but this is an expensive process to set up and may not be readily available to companies.



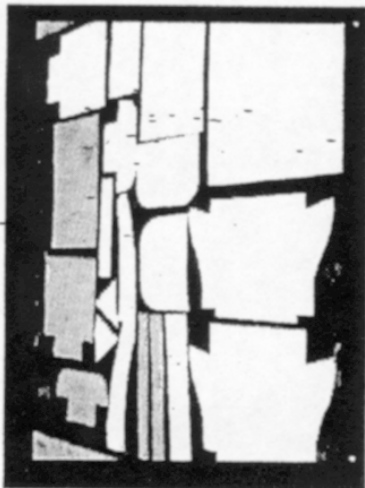
One further way of producing the images onto the pocket could be using embroidery. The image could be produced by computer and then programmed to reproduce the image very fast, accurately and on a large scale.



Images showing the screen printing process. Screens being produced through to garment images produced.

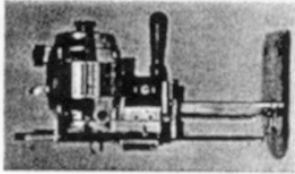


MANUFACTURING MY PRODUCT IN QUANTITY



The pattern for the bag will be laid out on a table on top of several layers of the selected fabric it will be cut out using a band knife. The band knife could be hand or computer controlled.

This method will allow many similar bags to be cut out at the same time.

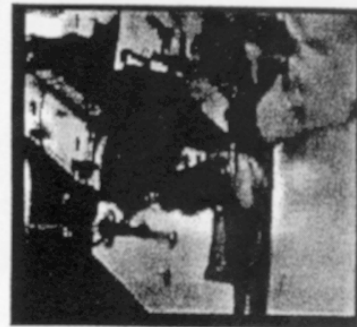


Pattern ready for cutting.

Electric band knife



Once the pieces that make up the bag have been cut out they will be manufactured using industrial sewing machines. Trained hand machinists will stitch the various parts together. Each machinist may carry out a specific task and pass the bag along the production line to the next operator so that the bag will be assembled piece by piece. Or alternatively one machinist may construct the complete bag at her own work station.



Inspectors will take sample bags off the production line in order to check that quality is maintained throughout the manufacturing stages.

