FABRIC TO YARN ACTIVITY

OBJECTIVES

1. Students undertake an appraisal and comparison of a range of fabrics on the basis of:
    a) touch, and
    b) appearance.

2. Students consider wool compared with other fabrics and learn about wool properties.

CURRICULUM LINKS

Level 5, 6: Science
Level 5, 6: Intrapersonal development

Extension A links:
Level 5, 6: Design, Creativity and Technology

Extension B links:
Level 5, 6: Mathematics

MATERIALS

A range of fabric samples for each group of participants- available through LandLearn.

METHOD

1. Start by tuning in- discuss the wool industry in Victoria.

- Worth $1 billion in exports to Victoria. Most goes to China and Italy. 6500 wool growers in Victoria.
- Uses of wool: mainly clothes (including specialist clothing), also used for carpet, insulation, bedding and fashion accessories.
- Wool is grown in Australia and then shipped out- for the majority of our wool, cleaning and processing happens overseas.
- Prompt questions might include: How much of what we wear is wool? What percentage of your wardrobe is wool? Ask students to check tags on blazers/jumpers.

2. Divide into a maximum of five groups and hand out workseet 1. The fabric samples are made up of the following textile fibres: wool, cotton, acetate, microfibre, polyester, nylon, nylon/acrylic blend and silk.

3. Begin by handing out a sample of colour ID- White (1) to each group. Encourage the students to open the material and feel it. They should assess the fibre on a scale of 1 – 7 (poor to good) for comfort and appearance which takes into account **softness**, **drape**, **handle**, **finish**, **texture** and **colour** (see glossary for definitions). In the 'prickle' column students can note whether they felt any prickle fibres by tapping one layer of the fibre on the underside of their forearm. They can start guessing what type of fibre it is and its uses, or this step can be saved for the class discussion in step 5.

4. Repeat step 3 for each colour ID, in the order of the worksheet is easiest.

5. When the comfort and appearance appraisal is completed, go through each colour ID one by one as a class and compare ratings (no wrong answer as everyone interprets touch differently)- write the range of responses in a table on the board. Then make an assessment of the end use of the fabric in column 3, then guess the fibre type and write the answer in column 4.

6. Did you correctly name each fabric? How did the woollen fabrics compare to the others? Are you surprised by this, or was it expected?

Extension:

A. Design an outfit made entirely of wool. Consider that some types may need to be higer micron wool for stiffness, and others finer wool. Outline properties on your design sheet including softness, drape, handle, finish, texture and colour.

B. Using the diameter distributions for fabric samples Figures 1-11 reflect on the prickle feel of each fabric, what rule of thumb can be made for prickle? (teachers: prickle is affected by the proportion of fibres over 30um).

The fabric samples provided for this practical are only <u>one</u> example of these fibre types (with the exception of wool and nylon). For each one of these fibres there are many ways to present a fabric to the consumer, with not only the actual fibre affecting the "feel" and "look" of a fabric, but also the manufacturing and processing methods.

Conclusion :

The quality of a fabric is influenced by a number of properties. While some of these can be measured and specified, other qualities depend on personal preferences. When marketing fabric, quality specifications and consumer preferences must be known, so that effective marketing strategies are implemented.

This session has allowed you to appreciate that there are a range of fabrics made from different fibres, and each with their own qualities. Among these, there is a definite place for wool as a comfortable, “everyday” apparel fibre, as well as for more elegant and stylish uses.

Farmers can influence many of wools properties including prickle and softness due to the way they select sheep for breeding. Sheep can be bred and/or managed to have a lower micron, a lower frequency of waves in the wool (crimp frequency), less short fibres and less variation in a flock’s wool quality.

Glossary:

Appearance:
Includes colour, drape, finish and texture properties.

Colour:
This is often described as depth of colour. Wool is often said to have good depth of colour, whereas most artificial fibres do not. One way to assess this is to compare the colour in well-lighted conditions, then in poorer light. If the colour stays relatively the same, the depth of colour is better.

Comfort:
Measured by the wearer and is impacted by finish, handle, softness and texture.

Drape:
This is the way the fabric hangs or falls from an object or person. A fabric with good drape would hang limply in graceful folds.

Finish:
A process after manufacture which creates specific surface properties. This could include visual, tactile and/or performance qualities. Eg a silken finish.

Handle:
The feeling of the touch of the fabric eg. "rough", "smooth", "harsh", or "pliable".

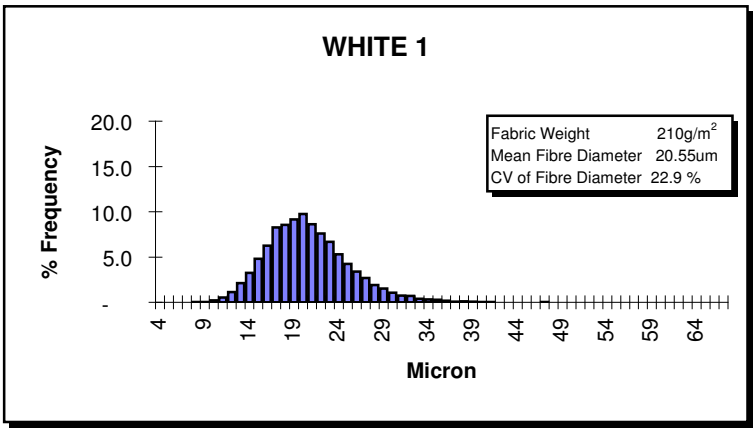
Micron:
The thickness of a single strand of a fabric (1000^{th} of a millimetre). Relates to softnesss.

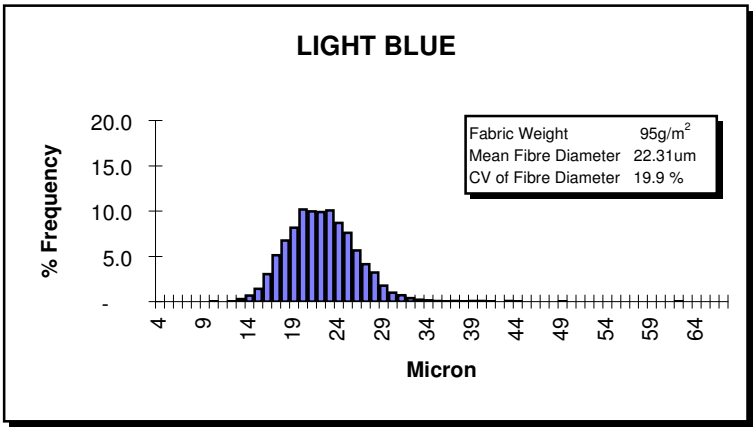
Prickle:
Prickle can be tested for by tapping one layer of the fibre on the underside of the forearm- a prickly feeling indicates prickle fibres are present. Prickle factor depends where the fibre is worn on the skin and the sensitivity of the person. The prickle sensation is caused by the ends of fibres 'poking' out from the fabric or yarn, and pressing against the skin. It is more likely to prickle if it is a short fibre held tightly in place and is a thicker micron. When a fabric has more than 5% of fibres over 30 microns then it is likely to produce a prickle sensation in most wearers. Other fibres can cause prickle (not just wool).

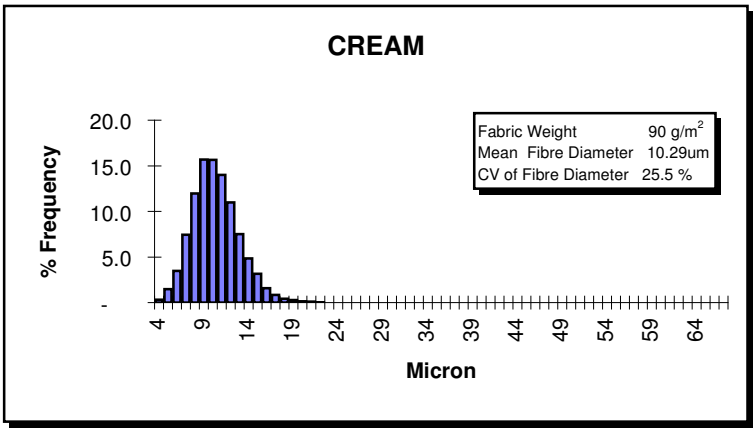
Softness:
A soft fabric is described as yielding to pressure put upon it. In the hand, soft fabrics will easily "scrunch up", providing little resistance to compression.

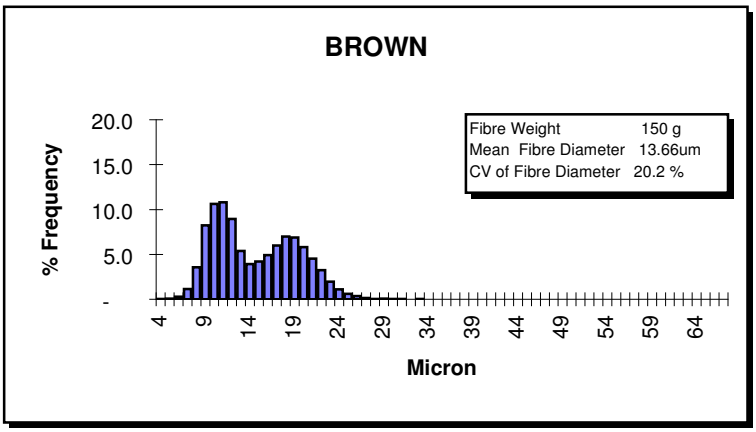
Texture:
Patterns formed physically, compared with through colour.

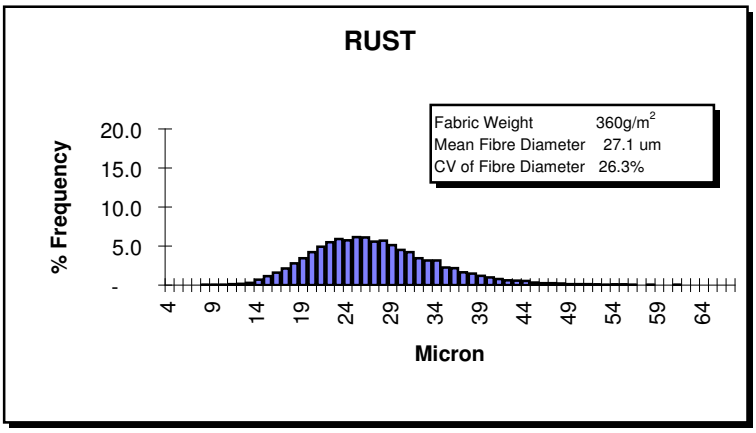
Diameter Distributions for the Fabric Samples (Figures 1-11)

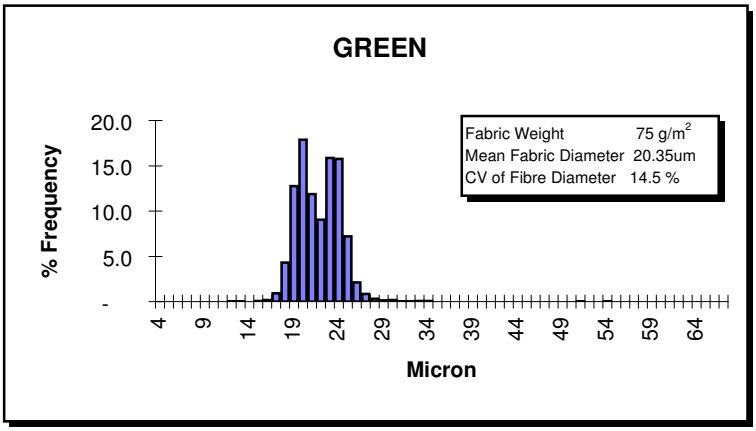


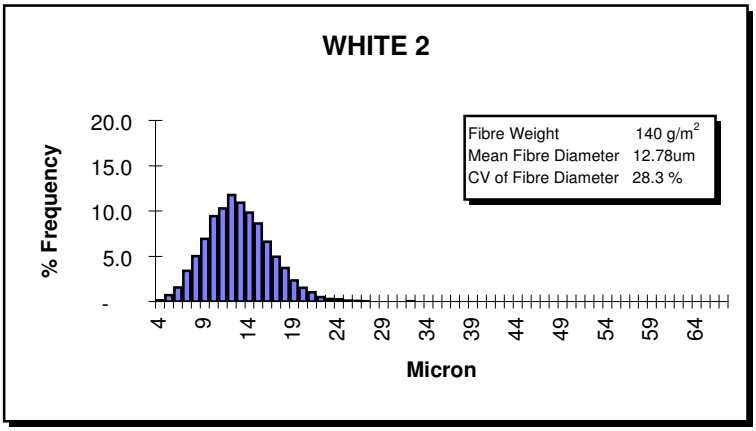


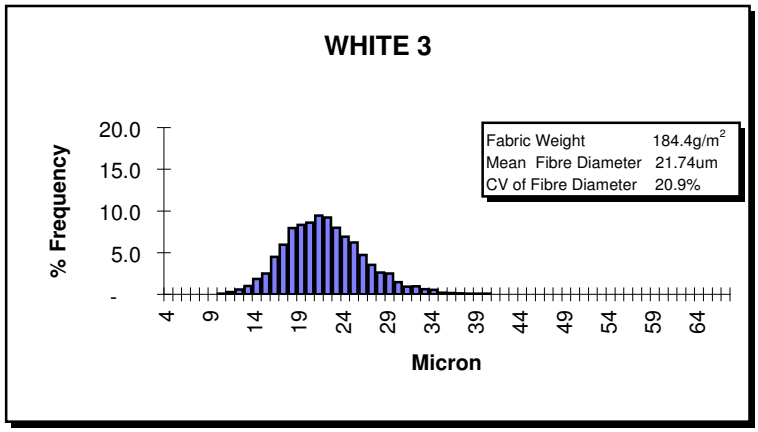


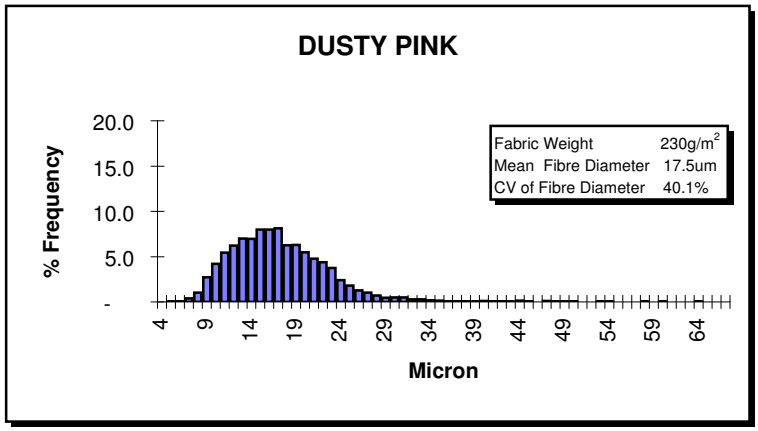

BROWN
% Frequency
20.0
15.0
10.0
5.0
-
4 9 14 19 24 29 34 39 44 49 54 59 64
Micron
Fibre Weight 150 g
Mean Fibre Diameter 13.66um
CV of Fibre Diameter 20.2 %

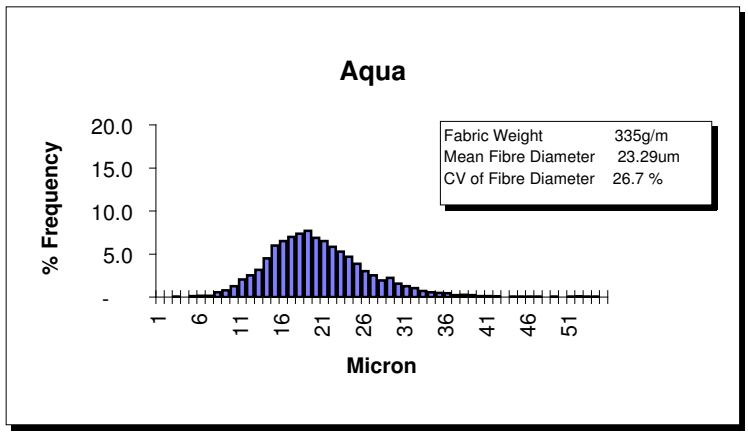

RUST
% Frequency
20.0
15.0
10.0
5.0
-
4 9 14 19 24 29 34 39 44 49 54 59 64
Micron
Fabric Weight 360g/m2
Mean Fibre Diameter 27.1 um
CV of Fibre Diameter 26.3%

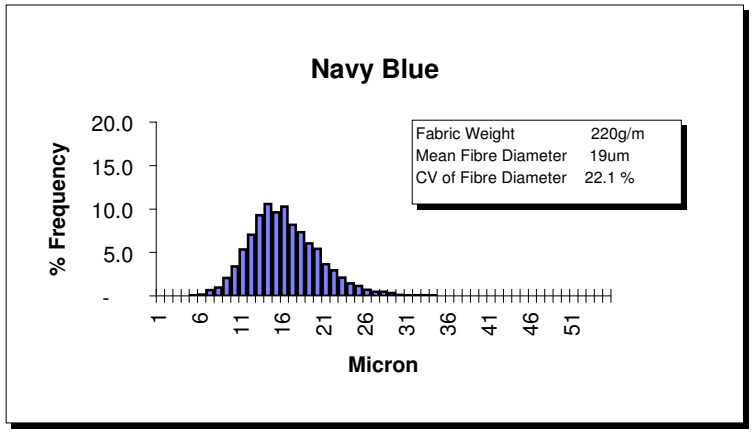

GREEN
% Frequency
20.0
15.0
10.0
5.0
-
4 9 14 19 24 29 34 39 44 49 54 59 64
Micron
Fabric Weight 75 g/m2
Mean Fabric Diameter 20.35um
CV of Fibre Diameter 14.5 %


WHITE 2
% Frequency
20.0
15.0
10.0
5.0
-
4 9 14 19 24 29 34 39 44 49 54 59 64
Micron
Fibre Weight 140 g/m2
Mean Fibre Diameter 12.78um
CV of Fibre Diameter 28.3 %


WHITE 3
% Frequency
20.0
15.0
10.0
5.0
-
4 9 14 19 24 29 34 39 44 49 54 59 64
Micron
Fabric Weight 184.4g/m2
Mean Fibre Diameter 21.74um
CV of Fibre Diameter 20.9%


DUSTY PINK
% Frequency
20.0
15.0
10.0
5.0
-
4 9 14 19 24 29 34 39 44 49 54 59 64
Micron
Fabric Weight 230g/m2
Mean Fibre Diameter 17.5um
CV of Fibre Diameter 40.1%


Aqua
% Frequency
20.0
15.0
10.0
5.0
-
1 6 11 16 21 26 31 36 41 46 51
Micron
Fabric Weight 335g/m
Mean Fibre Diameter 23.29um
CV of Fibre Diameter 26.7 %


Navy Blue
% Frequency
20.0
15.0
10.0
5.0
-
1 6 11 16 21 26 31 36 41 46 51
Micron
Fabric Weight 220g/m
Mean Fibre Diameter 19um
CV of Fibre Diameter 22.1 %

Worksheet 1

COLUMN	1	2	3	4	5
ID colour	COMFORT RATING poor .....good	APPEARANCE RATING poor .....good	FIBRE TYPE (eg. Wool, cotton, polyester, nylon, silk, microfibre, acetate)	FABRIC USES	PRICKLE (Yes, Some, No)
White (1)	[1] [2] [3] [4] [5] [6] [7]	[1] [2] [3] [4] [5] [6] [7]			
Light Blue	[1] [2] [3] [4] [5] [6] [7]	[1] [2] [3] [4] [5] [6] [7]			
Cream	[1] [2] [3] [4] [5] [6] [7]	[1] [2] [3] [4] [5] [6] [7]			
Brown	[1] [2] [3] [4] [5] [6] [7]	[1] [2] [3] [4] [5] [6] [7]			
Rust	[1] [2] [3] [4] [5] [6] [7]	[1] [2] [3] [4] [5] [6] [7]			
Green	[1] [2] [3] [4] [5] [6] [7]	[1] [2] [3] [4] [5] [6] [7]			
White (2)	[1] [2] [3] [4] [5] [6] [7]	[1] [2] [3] [4] [5] [6] [7]			
White (3)	[1] [2] [3] [4] [5] [6] [7]	[1] [2] [3] [4] [5] [6] [7]			
Pink	[1] [2] [3] [4] [5] [6] [7]	[1] [2] [3] [4] [5] [6] [7]			
Aqua	[1] [2] [3] [4] [5] [6] [7]	[1] [2] [3] [4] [5] [6] [7]			
Navy Blue	[1] [2] [3] [4] [5] [6] [7]	[1] [2] [3] [4] [5] [6] [7]			

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Teachers notes for worksheet 1

ID colour	FIBRE TYPE	FIBRE USES	MICRON	% fibres >30um	WEIGHT	RETAIL PRICE *dated figures	COMMENTS
White (1)	Pure wool	Trousers Slacks Suits	20.6um	3.8%	210 g/m2	Not available	This fabric has come straight off the weaving loom. Because it is unfinished many people can feel the fibre ends protruding from the body of the fabric. Many people guess that this is cotton.
Light Blue	Acetate	Nightwear Lining garments	22.3um	6.8%	95	$4.99/metre*	This lightweight fabric creases very easily. Acetate is made from wood pulp and cotton trash, how artificial is it? The same fibre is used ot produce the clear acetates for overheads. This fabric is sold as 'Dance Time Satin'.
Cream	Raw silk	High fashion garments eg wedding dresses	10um	0%	90	$19.95/metre*	This fabric has many irregularities which is a feature for designers- irregularities aren't accepted in high quality wool. Women tend to like this fabric more than men.
Brown	Microfibre/ polyester	Dress pants Suits	13.7um	0.1%	150	$7.50/metre*	This fabric doesn't crease, it is difficult to sew. In hot weather this fabric can be very uncomfortable.
Rust	Pure wool	Upholstery	27.1um	32%	360	?	The broad micron helps with durability. There is high prickle but this doesn't matter for the intended use.
Green	Ripstop nylon	Outer wear Raincoats Tents	20.4um	1%	75	$11/metre*	This is a structural fabric, sold as showerproof. Wool cannot serve the function of showerproof.
White (2)	Homespun cotton	Craft work Quilting	12.8um	0%	140	$2.99*	Has seed running through the fabric (irregular lines of dark which can be seen as a fault) but if sold to the right market seeded cotton is a quality and has an authentic homespun look.
White (3)	Pure wool	Dresses Undergarments	21.7um	5.3%	184	?	Some might feel prickle with this fabric? This is a light weight cloth suited for wearing close to the skin.
Pink	80% nylon 20% acrylic	Cardigans Jumpers Dresses	17.5um	3.5%	230	$15.95*	Sold 'angora knit'. This fabric is a direct competitor with wool. Consider that it is 80% nylon- compare with the other nylon fabric in this session (green).
Aqua	Pure wool	Overcoats School blazers	23.3um	14%	335	?	This is high quality material, any stained or pigmented fibres would be a problem.
Navy Blue	Pure wool	Fine suits & trousers	19.0um	1.4%	220	?	This is classic high quality woollen product.

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