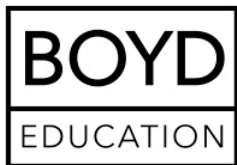


#ThinkDo Cards

Smart, Modern & Technical Materials & Emerging Technologies

By Paul & Julie Boyd

This resource will be updated and developed over time. If you have received this resource before it may be worth replacing your file with the more up to date version.



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#ThinkDo Resources



- This resource supports the content of some of our courses. See more about our courses at <http://www.julieboyd.co.uk/workshops-2/calendar/>
- #ThinkDo cards are designed as structured retrieval activities and can be used as general classroom activities, homeworks, extension activities or as low stakes tests. They can also be used for display.
- The #ThinkDo cards are mapped against our 10 Key Learning Areas in D&T document which can be found at <http://www.julieboyd.co.uk/dt/dt-curriculum-planning/10-key-learning-areas/>. Over time our long-term goal is to produce at least one card that references learning from this document.
- The cards have an image and a series of questions designed to prompt learners to think more deeply about D&T, whether it be from the perspective of an exam, the non exam assessment, or simply to encourage a wider interest in design generally.
- The slides can be printed and used as A4 worksheets or they can be trimmed to the size of the cards. Changing the settings on the printer also means the size of the resource can be changed e.g. to print 4 cards onto an A4 page. The A4 slides could be laminated to create a reusable resources with learners writing around the card using dry erase markers.
- New #ThinkDo cards are produced all the time linked to a variety of KS3, 4 and 5 learning areas. Free Jpeg #ThinkDo cards are given away each week on our Facebook page (www.facebook.com/julieboydonline) and are also posted on our blog at <https://goo.gl/1lwCVi>.



#ThinkDo

Carbon Fibre

Carbon fibre is a composite material. What does this mean?

Name other types of composites

Properties of carbon fibre?

Uses of carbon fibre?

Watch these videos on carbon fibre
<http://bit.ly/1ImJLoP>

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#ThinkDo



This phone case uses D30 material.

What properties does this add to the product?

D30 is a smart material. What does this mean?

Find our more at www.d3o.com

www.julieboyd.co.uk



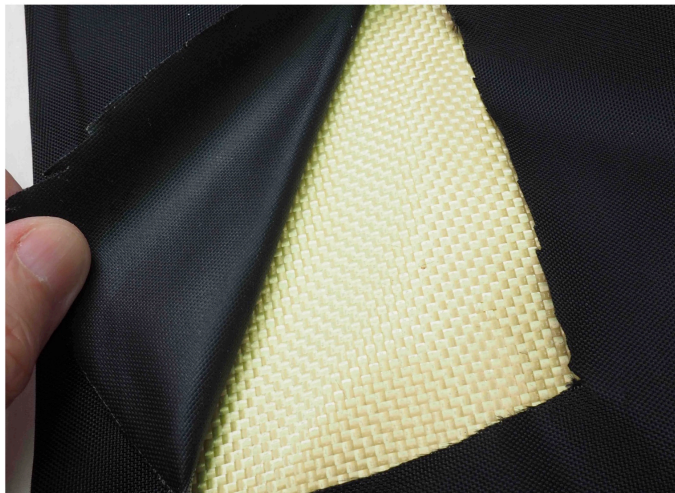
#ThinkDo

Why are fluorescent materials used for these products?

Are fluorescent materials considered smart or modern?

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#ThinkDo



Kevlar is an aramid fibre.
What does this mean?

What are the properties
of Kevlar?

Kevlar is often used
inside bullet proof vests.
Where else might Kevlar
be used?

Kevlar might be classified
as a technical textile.
What does this mean?

What other technical
textiles can you name?

#ThinkDo



The label on the trainer says memory foam has been used on the footbed. What is memory foam?

What properties does memory foam add to the trainer?

Memory foam is a 'smart' material. What does this mean?

What other types of products might memory foam be used in?



#ThinkDo

Mouse mat with a Microban antibacterial finish.

What properties does this add to the product?

What other products might also use an antibacterial finish?

Microban is a brand name of an antibacterial finish. What other brand names are there?



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#ThinkDo

- What is a microfibre?
- What properties do they have?
- What products might they be used for?

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What product would you design using a microfibre fabric?



#ThinkDo

What are the properties of neoprene?

What types of products is neoprene used for apart from those in the images?

Find out more about neoprene & wetsuits at www.oneill.com

www.julieboyd.co.uk



#ThinkDo

Product focus: Paper watch (www.suckuk.com)

This watch is actually made out of Tyvek which is a material with the look & feel of paper but which is much stronger. What else is this material used for?

The strap can be customised with pens, paint, glitter or any other colouring materials. What would you design using Tyvek that could be customised in this way?

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#ThinkDo



Tyvek is a technical textile. What does this mean?

Tyvek is a breathable material. What does this mean?

Tyvek is made out of polyethylene. What other products is polyethylene used for?



Products designed using Tyvek
Dan X MA Fashion Design student
at Nottingham Trent University
www.justdanx.weebly.com

www.julieboyd.co.uk



#ThinkDo

The design on this t.shirt is photochromic. What does this mean?

Is the term 'photochromic' considered 'smart' or 'modern'?

How might photochromic dye be used to add functionality to a product?

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#ThinkDo



Activate the centre of the watch face by facing it to the sun. Check the shade of purple:

WEAK	●	Apply appropriate sun cream regularly.
MEDIUM	●●	Apply appropriate sun cream regularly, and wear sunglasses and hat.
STRONG	●●●	Apply appropriate sun cream regularly, and wear sunglasses, hat and protective clothing. Limit time in sun between 10am and 4pm
VERY STRONG	●●●●	Stay indoors or in shade. If outside follow above precautions.

Only a guide, watch does not prevent sunburn.

This bracelet watch is photochromic. What does that mean?

Who might the user be? What needs does it meet?

What other items might photochromic materials be used on?



#ThinkDo

These beads & threads are photochromic. What does photochromic mean?

Is the term photochromic considered 'smart' or 'modern'? Explain your answer.



The beads & thread might be used for decorative effect on a product. What types of products might they be used on where the photochromic properties are functional?

What would you design?

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#ThinkDo

These spoons are thermochromic. What does this mean?

Who might a typical user be?

What are the advantages & disadvantages of these spoons compared to an ordinary polymer spoon?

What other products might benefit from the addition of thermochromic properties?





#ThinkDo

This babygro is thermochromic. What does thermochromic mean?

Is the term thermochromic considered 'smart' or 'modern'?

How does the use of thermochromic dyes add value to this product in the eyes of the consumer?

Find out more about this product at www.babyglow.uk.com

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#ThinkDo

The mountains on this beer can change colour when the can is cold. What keywords might be used to describe this?

How might this technology be used in other product applications?

What would you design?

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2 STAGE COLD
ACTIVATED CAN FOR ICE
COLD REFRESHMENT
STORE YOUR COORS LIGHT
CAN IN THE FRIDGE.
WHEN THE FRONT
MOUNTAINS TURN BLUE IT'S
AS COLD AS THE ROCKIES
AND READY TO DRINK.





#ThinkDo

This bag is made from reflective material. Is this material considered 'smart' or 'modern'? Explain your answer.

How does the use of the reflective material add to the functionality of the product?

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What other types of products is this material used for?

Find out more about the bag & other products using this material at www.provizsports.com



#ThinkDo

What is a spacer fabric?

Properties?

Other uses?

How are they made?

<http://www.baltex.co.uk/spacerfabrics/>

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#ThinkDo

Speedo's Fastskin swimsuit is an example of biomimicry. What does biomimicry mean?

What performance properties does Speedo's Fastskin have?

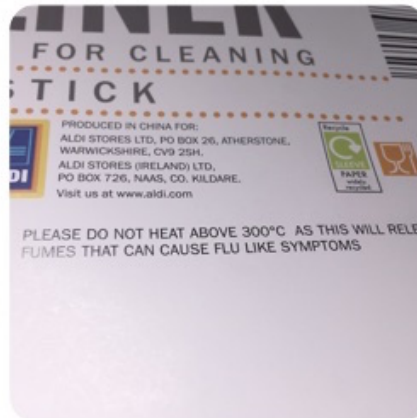
Find out more about Speedo Fastskin at www.speedo.co.uk/technology/fastskin

What other examples of biomimicry products can you name?



What would you design using biomimicry ?

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#ThinkDo

Keywords

Explain the following:

PTFE

Teflon

Membrane

Gore-Tex

Breathable

Properties?

Advantages?

Disadvantages?

Other examples &
brand names?

Types of products?

Find out more:

[www.http://goo.gl/p3zujD](http://www.goo.gl/p3zujD)

Find out more:

www.gore-tex.co.uk

www.julieboyd.co.uk

#ThinkDo

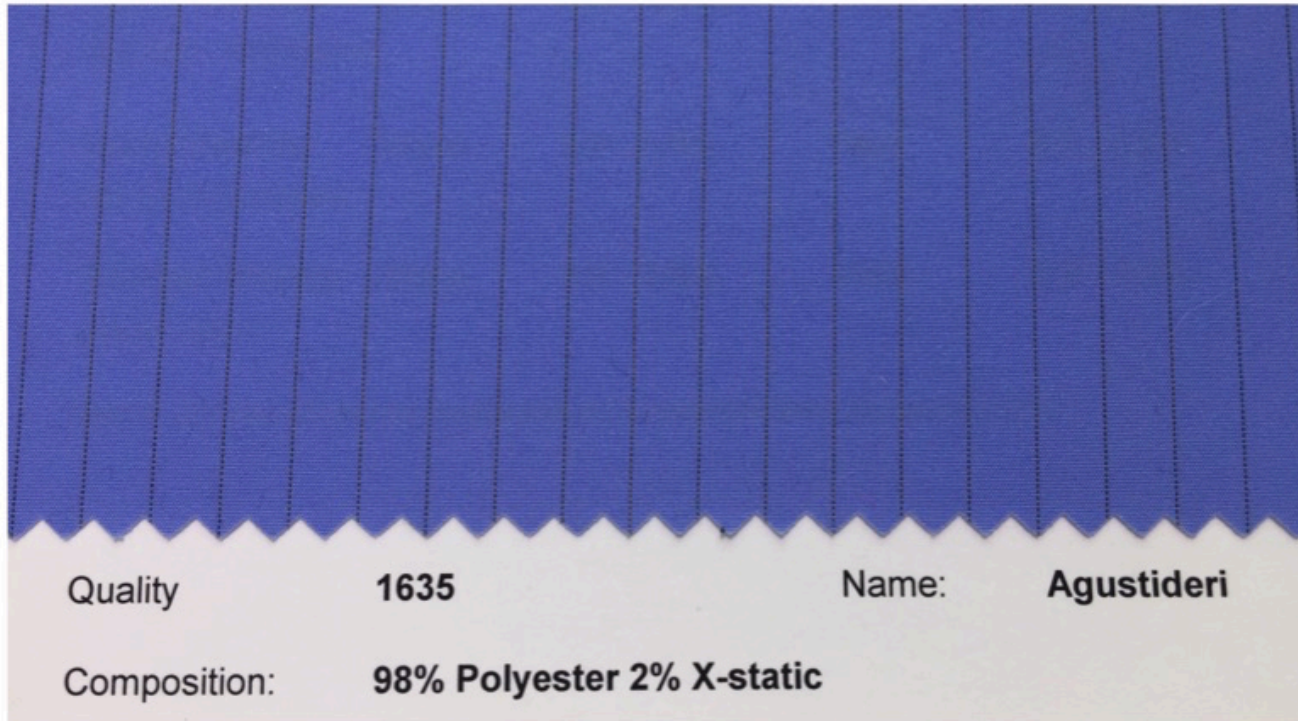


What properties does Thinsulate add to this hat?

What other products might Thinsulate be used for?

The hat has been knitted. What are the advantages of using this method of fabric construction for the hat?



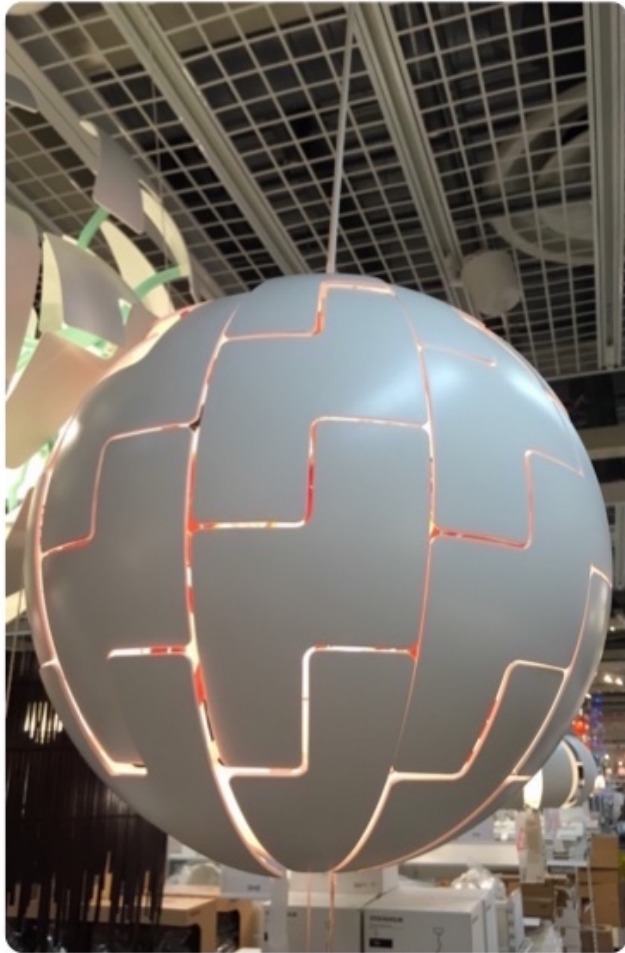


#ThinkDo This fabric is made from polyester and X-static.

This fabric is made from polyester and X-static. X-static is a fibre coated with silver. The stripes in this fabric are made from X-static yarns which add anti bacterial properties to the fabric.

What properties does the polyester add to the fabric?

What might this fabric be used for?



#ThinkDo

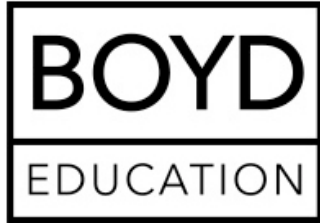
Product Focus: Interactive light (Ikea)

When the cord is pulled the shade opens up. How might this be inspired by biomimicry?

What other product could you redesign to open up in this way?

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Email julie@julieboyd.co.uk or paulboyd@mac.com