CREATING ONLINE PRACTICALS FOR THE INTERPRETATION OF EVIDENCE USING A HOME ENVIRONMENT

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Background to development of Practicals.

- Traditionally taught aspects of Forensic Interpretation by practical's which allow students to question how an aspect will affect the evidential significance of an evidence type.
- Covid and the move to online learning altered this approach and allowed for the development of online alternatives using a students home environment.
- Presentation outlines some of these alternatives.
- Initial Group – 2nd Year Forensic Science Undergraduate students.

Interpretation of Fibres – where the journey started

- Traditionally, practical around collecting fibres and categorising them in order to create collective information around the commonness of fibre colours.
- Hybrid deliver forced the practical to be carried out online which lead to the development of a series of online, around the house, practical sessions focusing on the interpretation of trace evidence.

Interpretation of Fibres – Online Practical

Objective – introduce to students the concept that fibre colour and fibre type can influence the forensic conclusion – i.e. get students to understand a common fibre type/colour can reduce evidential significance.

Practical Task - Each group member is to select 15 items of upper clothing from their wardrobe (ideally tops, shirts, T-Shirts would be ideal for this practical task) and record a description of the item in terms of colour and fibre type.

As a group you will then collate everyone's findings and consider the following three questions:

- What is the most common fibre colour in the survey?
- What is the most common fibre type in the survey?
- Do these findings agree with published Population Studies?

Description of Item	Colour(s)	Fibre Type(s)
Grey sweatshirt jumper	Grey	67% polyester 27% viscose 6% cotton
Cat print tshirt	Black (White print)	100% cotton
Crop Top	Black	66% rayon 29% polyamide 5% elastane
Stretch T-Shirt	Black	96% viscose 4% elastane
Pyjama Top	Maroon	100% Cotton
Puffy Sleeve Top	Cream	93% Cotton 7% Elastane
Wrap Cardigan	Plum	42 % Nylon 29% Wool 29% Mohair
Crinkle Wrap Crop Top	Orange	100% Polyester

STUDENTS RESULTS:

- Results collated in Groups via Teams
- Seminar session looked at results and trends as well as introducing Population and Database Studies

Student Seminar Task

- How do your results compare with published results (students were tasked with reading a set population study prior to the seminar - Palmer et al, The population of coloured fibres in human head hair, 2014).

- Allowed for consideration of:
  - Difference between a Database and Population Study
  - Discussion of common trends in observations (ie blue/black most common, cotton most common)
  - Discussion on differences between individuals and group results/published results.
  - What other factors might influence a population study (ie why it might be different to a Database)

Further online home based interpretation practicals developed

GLASS

PAINT

FOOTWEAR MARKS

The Interpretation of Glass

- **Practical Design**: Based around the fact the Window Glass is the most common type of glass seen in forensic casework.

- Students were asked to question if this is the most common glass seen in an environment and does the Glass seen in casework represent the most common broken glass seen in the everyday environment?

Glass Home Practical

- **Overview of the Practical**: Individually choose an area near you house where you will carry out your own glass survey, take some observations of this area and record these on your Glass Practical Form (appendix 1).
- Spend approximately 20 to 30 minutes exploring the area you have chosen carefully noting where you see instances of broken glass (appendix 1). Remember do not touch the glass but record your observations on the form.
- Collate your findings as a Group.
- **Class Questions**: The most common glass seen in the forensic laboratory is flat glass, do you findings show the most common glass found as a background population to be flat?
- The most common glass seen in the forensic laboratory is colourless, do your findings show the most common glass found as a background population to be colourless?

Student Results

- Collated as a Group via Teams

Location of Glass	Number of Pieces forming Observed Population Type of Glass (if able to say)	Approx. size of Glass (do not touch the glass) in cm's	Condition of Glass (ie clean/dirty) and General Observations (ie is there a label)	Drawing of Glass
In the road	2 – Toughened	1 x 0.5	Clear, specks of dirt	Rectangle
Pavement	2 - Toughened	1 x 1	Clear, specks of dirt	Square
Roadside	3	0.5 x 1	Chipped/dirty	Triangle shape
Pavement	8 - Bottle	4 x 2.5	Dusty	
Driveway	TMTC – Toughened (Vehicle windows)	1 x 2	Dirty, foggy and blue	
Pavement	6 - Bottle	2 x 4	Dirty, green	Curved
Garden wall	16 - Bottle	4 x 6	Clean, clear	Curved

Student Seminar Task

- How do your results compare to what we commonly see in forensic casework?

- Allowed for consideration of:
  - Discussion on the formation of databases for assessing commonness of glass in the forensic laboratory
  - Differences in location affecting prevalence of broken background glass
  - Acquisition of broken glass though everyday activities

The Interpretation of Paint

- Two tasks set to the students as their practical
- **Task 1** – Spend approximately 40 minutes exploring the area you have chosen carefully noting, where you see windows, whether these windows are double glazed or painted and, if painted, what colour paint is present. Remember do not touch anything but record your observations on the form.

- **Task 2** - On blank white paper, make 20 paint sequences using your pens. These are to include lines of any thickness (measurements, in cm, include on your submission) and any colour from your pen selection (don't worry if you don't have many colours, that is absolutely fine). You are looking to recreate possible paint sequences that can occur by over-painting an area (such as a window sill) over time – each time something is painted the colour and thickness of paint applied may alter.

House Description (i.e. terrace, semi-detached, new build etc)	Double Glazed or Paint Windows	If paint, Colour?
Semi Detached	Painted Window	White
Semi-detached	Painted Window	White
Detached	Painted Window	Brown
Semi Detached	Painted Window	White
Semi detached	Painted Window	White
Semi Detached	Double Glazed	-
Detached	Doubled Glazed	-
Detached	Painted Window	White
Semi Detached	Painted Window	Blue
Semi Detached	Painted Window	Cream

Task 1 Results

Task 2 Results

Student Seminar Task

- Paper for Class: Moore et al, A survey of paint flakes on the clothing of persons suspected of involvement in crime, 2012

- Allowed for consideration of:
  - Most common colour (referenced also to paper) – Task 1
  - Is Paint as valid an evidence with the rise in double glazing? And how does this affect the significance of finding paint? – Task 1
  - Can Paint be considered conclusive evidence? – Task 2

Footwear Marks

Examples so far have been 2nd Year Forensic Science students who have previously meet and know each other.

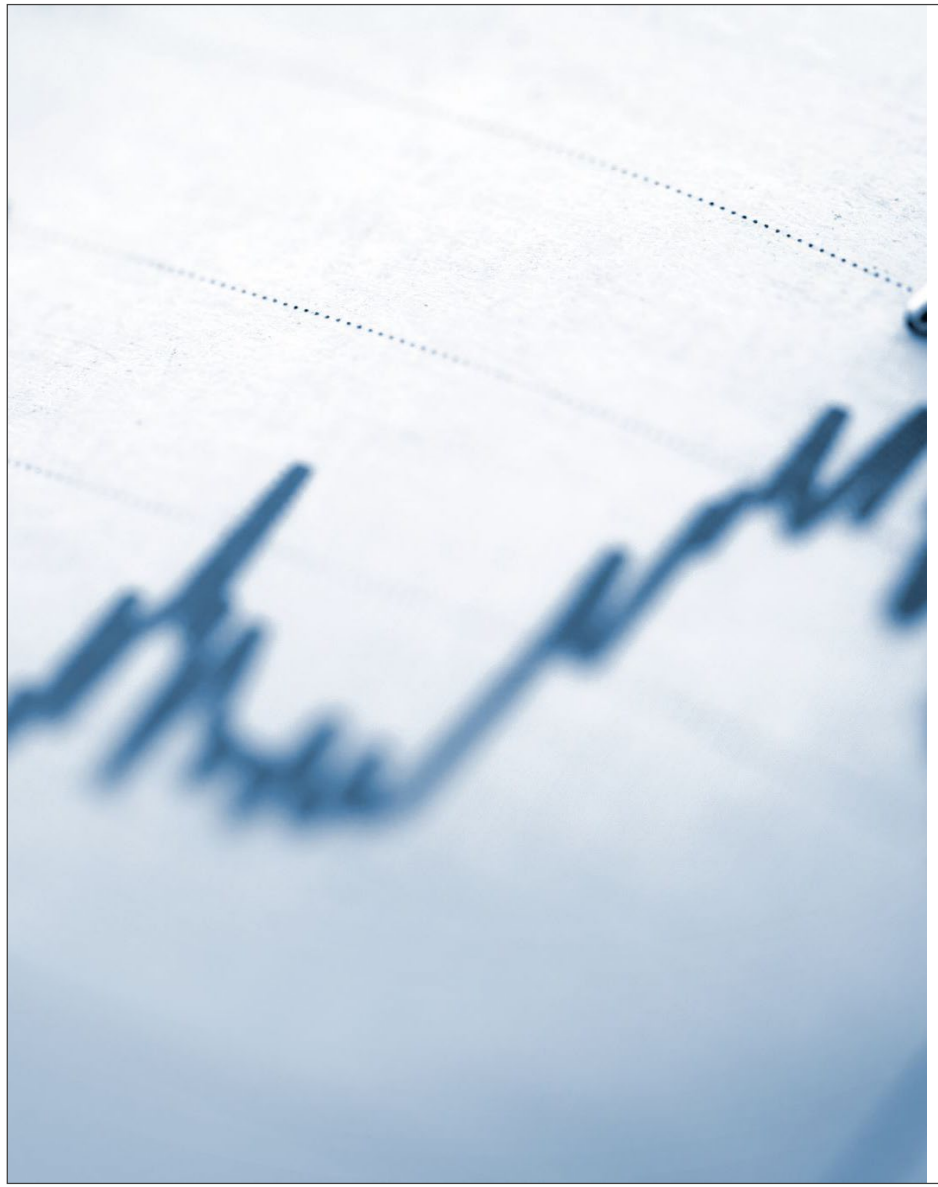
Working in groups to collate results much easier for these students when compared to 1st year students so consideration was needed to how these types of practicals could be delivered to 1st Year Students.

Footwear Marks

Students asked to examine four pairs of their own shoes

Activities based around recording areas of wear and damage features

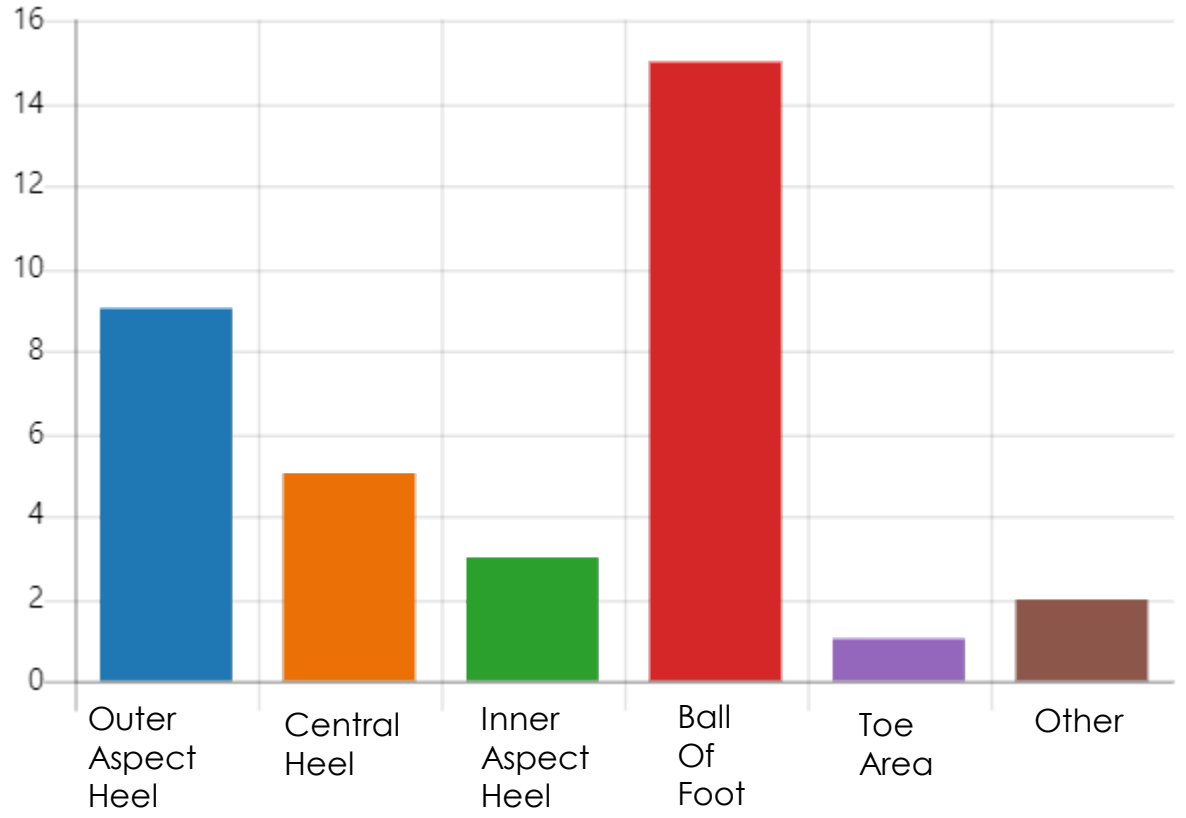
Students asked to record their findings via a Microsoft Forms Survey



STUDENT FOOTWEAR RESULTS

Graphs and Pie Charts created in Microsoft Forms ready to be used in teaching.

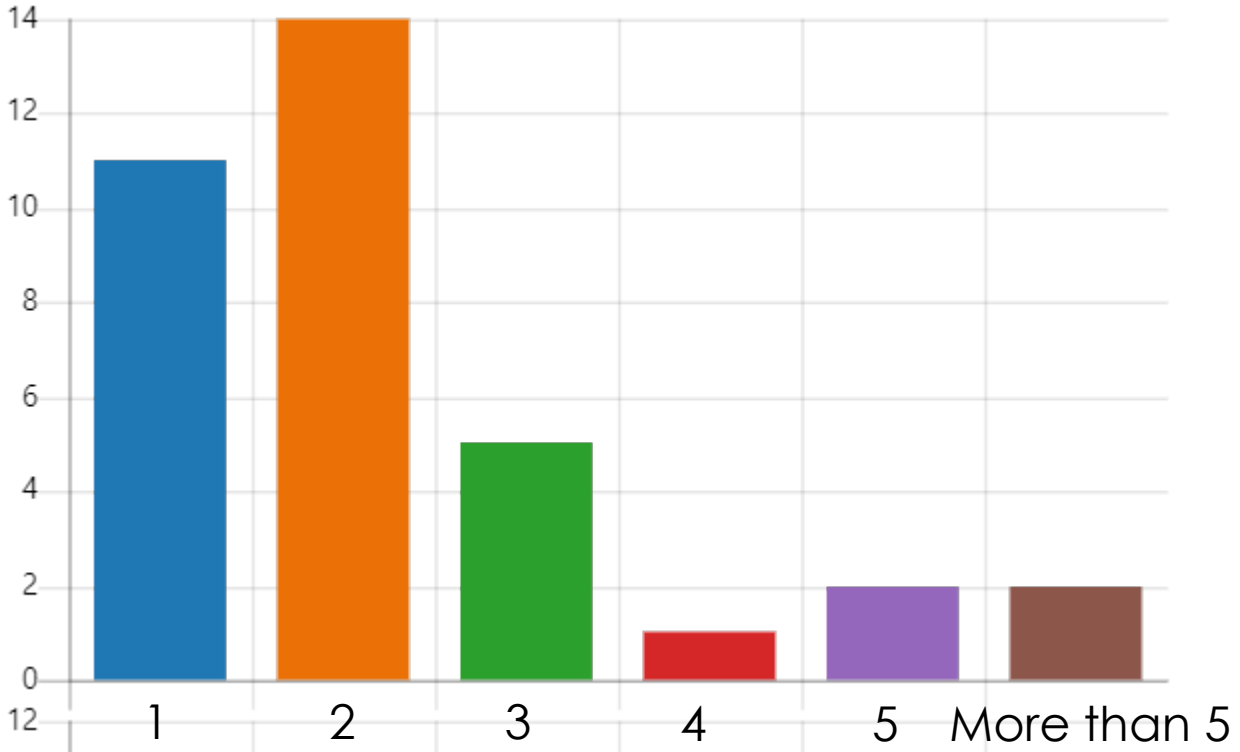
Areas of Wear



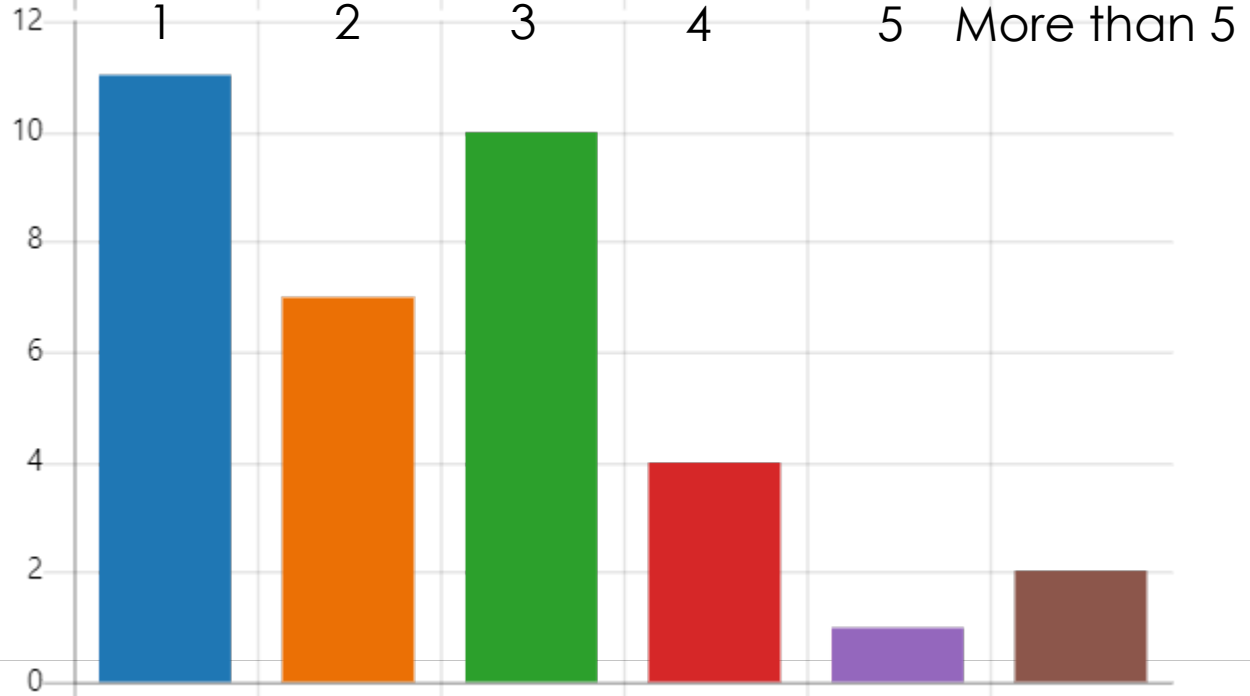
- Class Observations – Excellent recording of how the wear has affected the pattern.

- In general:
  - Deterioration of Pattern in some places due to wear
  - Pattern worn away or changed due to wear

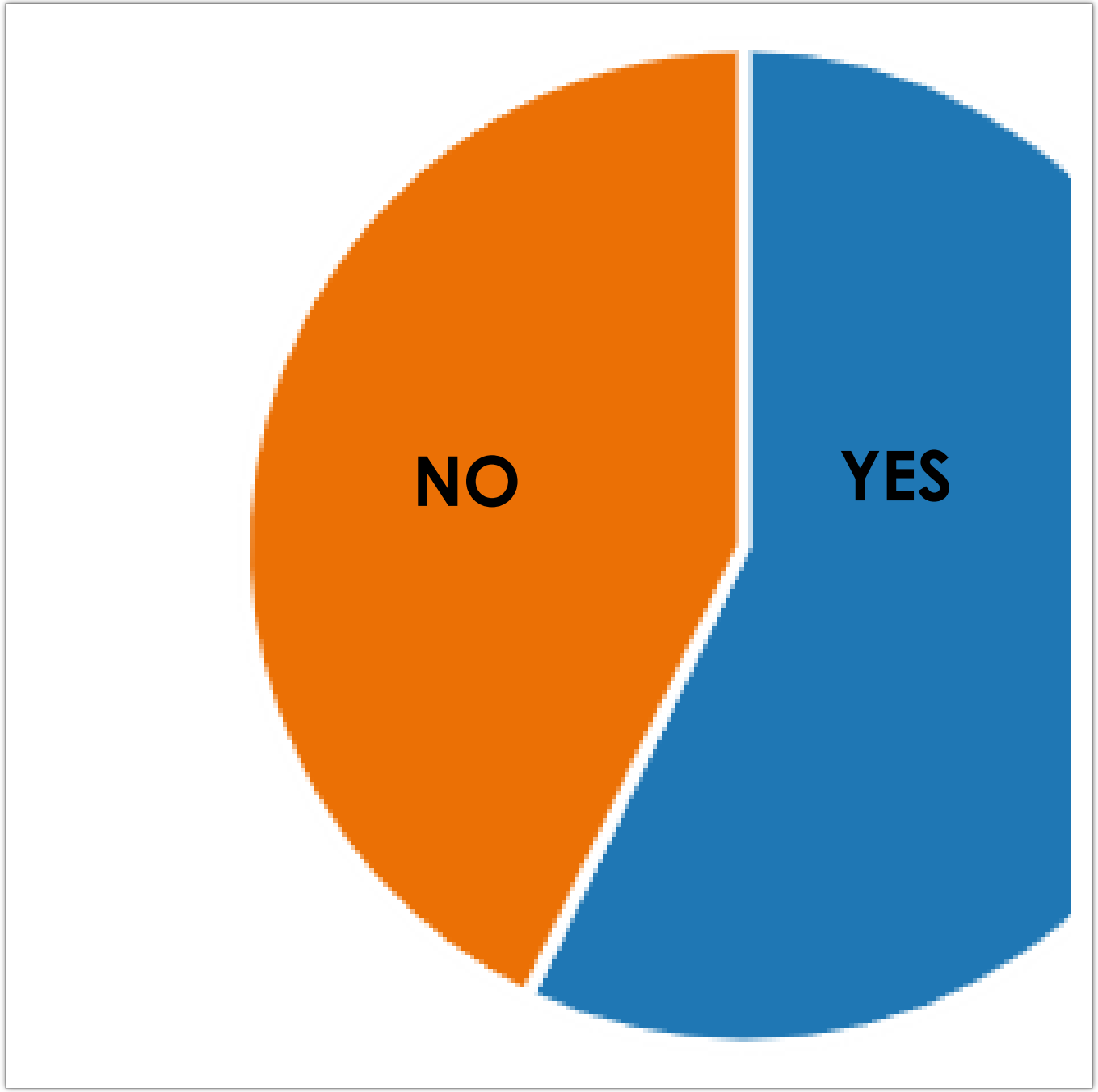
Wear Observations



Damage Features on
Left Item of Footwear



Damage Features on
Right Item of Footwear



- Can you spot anything that might be a damage feature in the same location of both shoes?

Seminar Session

- Using the generated results discussion focussed around how wear and damage can alter the evidential value of footwear marks as evidence
- Use of targeted questions which the students either commented on or voted on during the session

- Allowed for consideration of:
  - Are there more common areas of wear and does this alter the evidential value of wear?
  - Are there more common areas damage occurs?
  - Why damage features can potentially (in combination with pattern, pattern size/arrangement and wear) be conclusive evidence.

Any Questions?

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