Perceptions of Science

Analysis of Data

What types of data can you collect?

**Group activity 1:** Get into groups of 3 or 4 and ask each other the following questions (ensure you construct a suitable table to collate the data):

- Can you roll your tongue?
- Are you male or female?
- How old are you (in months)?
- How long is your arm (in cm)?
- What is your height (in cm)?
- Can you ride a bicycle?
- What’s your favourite food?

Once you have collected your data, collect data from other groups.
Once you have expanded your data set, answer the following questions:

1. What is the percentage of males to females?
2. What is the most frequent favourite type of food?
3. What is the mean age?
4. How many males can roll their tongue?
5. What is the median height?
6. How many females can ride a bicycle?
7. What percentage of people had an arm length that was over 25cm?
8. If we were to charge all the people over 175cm a premium rate to sit in the classroom – charged at £10 per person – how much would this come to?
9. What was the least favourite food?
10. Is there any correlation (pattern or relationship) between sex and height?
Igniting the statistical spark in the social sciences

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http://sites.cardiff.ac.uk/qstep/.
What is Q Step?

• Q-Step is a nationwide initiative to promote a step change in quantitative social sciences (Nuffield 2014)

• £19.5m programme funded by UK Government

• Involves 15 centres in the UK

• Social Analytics = Scientific investigation of social processes using statistical techniques
• Secured funding of £40 000, leading to the appointment of a grade 5 teaching associate in quantitative methods (Cara Jones)
• At St David's sixth form, they have created courses for over 400 students, with plans to expand social analytics throughout the college (1600 students)
• Agored Cymru have validated 2 Social Analytics (SA) units at Level 3, available across Wales for all Access to HE courses
• Invited to join the Royal Statistical Society UK education board (January 2016)
• Lead consultant in developing national statistical accreditation standards for level 4 and 5 courses with the Office for National Statistics (Foundation degrees)
• Delivered the Pilot Scheme in SA at Cardiff University 2014/15 and 2015-16 (80 students from, 5 local schools/colleges)
• Teacher placement scheme (12 members), developing SA qualifications and CPD events for FE lecturers/school teachers
• Project lead for the Welsh Baccalaureate conference July 2015 and 2016
• Delivered a series of data analysis workshops with the Central South Consortia in January 2016 (7 secondary schools)
• Secured institutional MOUs with Agored Cymru, MEI, and St David’s college, galvanizing collaborative links with national strategic educational partners
• Delivered well-attended ESRC Festival of Social science events on data science in 2014 and 2015 – for over 150 post-16 students, teachers and UG students from CU
<table>
<thead>
<tr>
<th>Week</th>
<th>Date (Week commencing)</th>
<th>Topic</th>
<th>Statistics covered</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>15/09</td>
<td>Induction</td>
<td>Designing research questions</td>
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<tr>
<td>2</td>
<td>22/09</td>
<td>Introduction to health</td>
<td>Psychology of learning introduction</td>
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<tr>
<td>3</td>
<td>29/09</td>
<td>Health changes over time</td>
<td>What is intelligence?</td>
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<td>4</td>
<td>06/10</td>
<td>Infection and disease</td>
<td>Food and learning</td>
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<tr>
<td>5</td>
<td>13/10</td>
<td>Epidemiology</td>
<td>Genes and learning</td>
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<td>6</td>
<td>20/10</td>
<td>Data analysis and simulation</td>
<td>Hypothesis testing</td>
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<td>7</td>
<td>27/10</td>
<td>Half Term break</td>
<td>t tests</td>
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<tr>
<td>8</td>
<td>03/11</td>
<td>Data analysis and visualisation</td>
<td>t tests</td>
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<tr>
<td>9</td>
<td>10/11</td>
<td>Coursework and presentation guidance</td>
<td>t tests</td>
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<tr>
<td>10</td>
<td>17/11</td>
<td>Gender and Health professionals</td>
<td>Boys vs girls</td>
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<td>11</td>
<td>24/11</td>
<td>Science tech and the real world introduction</td>
<td>Mass media and journalism introduction</td>
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<tr>
<td>12</td>
<td>08/12</td>
<td>What is science?</td>
<td>Science in the media</td>
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• Worksheets (Zin Obelisk) to build –

• Critical thinking, statistical intuition, statistical literacy

• How to
Benefits

• Suitable for students studying sociology, psychology, mathematics, geography, health, business studies, economics and the sciences in either years 12 or 13
• Enhances student UCAS applications
• Enriched learning environment
• Equips students with essential skills, across a wide range of disciplines
• WP targets
• ‘Made me confident with talking about hypotheses and variables’
• ‘It enriched my learning with other subjects’
• ‘Meeting students from other schools and colleges on different courses encouraged me to make new friends’
• ‘Discussions and debates were enjoyable’
• ‘It provided different information from other subjects’
• ‘Linked very well with my welsh bacc studies’
• ‘The certificate at the end!’
• ‘Interesting topics – gender, immigration and crime’
• ‘Learning about how different statistics can be used in everyday life’
“Students knowledge and understanding of statistical analysis had improved dramatically. The skills development was the most successful because for a large number of students this was a new aspect to their learning and supplemented their knowledge of research methodology”

“Also, just a quick thank you for inviting me to be part of the Social Analytics qualification development as I’ve really enjoyed being part of this new and exciting project. Can you please convey my thanks to the other members of the teacher placement scheme too. It’s also evident that the students who have attended the sessions with you over the last 2 years have greatly benefitted from the experience, so on their behalf thanks for including them on this scheme”
Thanks!

- Lisa Newman (St David’s)
- Cara Jones
- Janis Griffiths
- Alan Smith (Agored Cymru)
- Susan Diment (CU – ESSE)
- Andy Dodge (CU - SOCSI)
- FE steering group
- Teacher placement scheme group
- Ian Jones and DART team (CU – SOCSI)
- WBQ steering group
- Cardiff University Numeracy steering group
- PVC Patricia Price (CU)
- Cardiff Q-Step colleagues
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