



*Developing Faculty wide teaching  
of statistics and SPSS using web-  
based interactive resources*

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# Abstract

*SPSS forms a significant part of our undergraduate and postgraduate teaching at the Open University in Psychology and Social Sciences. Distance education presents its own problems in terms of supporting students with their learning of SPSS and Stats. This presentation aims to provide an overview over the directions of development of SPSS resources in the Faculty with some examples of materials in production and discussion of how multimedia resources can facilitate the learning of statistics in an online distance learning context*



# Study of SPSS at the Open University

- Used in Social Sciences, Maths and Education at undergraduate and postgraduate levels
- Approximately 8000 students each year studying courses in Social Sciences with some statistics and SPSS components.
- OU students study at a distance, using materials developed and provided by OU
- Two modules have residential school which use SPSS for practical empirical work, but students expected to use SPSS independently for their reports.
- Wide range of statistical analyses are taught



# Challenges of distance education at Open University

- Possible Isolation of students
- Lack of face to face
- Supporting students when things go pear-shaped.
- Characteristics of the student corpus
- Technologically mediated (e.g. VLE, first class)
- Costs
- Inclusive, open education
- Course specific (e.g. sequencing, workload)



# Technical challenges

- Software environments
  - Vista (version 14 problems)
  - Firewall issues in authentication
  - Students with access issues
- Guidance becomes out of date with new updates
  - Reuse of materials
  - Costs of update
- Desirability of support of 'ancient' versions of SPSS
- Balance between being an early adapter, vs. trailing the developments



# Teaching Statistics is a challenge

- Statistics & IT anxiety
  - Effect on academic achievement (Elmore et al., 1993; Lalonde & Gardner, 1993; Onwuegbuzie, 2004; Zanakis & Valenza, 1997).
  - Online tuition may be superior in reducing stats anxiety (DeVaney, 2010).
- Distance learning – hands-on practical experience of Stats software
- Multi-faceted
  - All of the above + procrastination, attitudes, age, efficacy/confidence.
- How students fare with stats and stats software influences transfer of skills to real world applications (Maxwell, Wang & Chiu, 2008)



## 2007 -2008

- HEA co-funded mini-project
  - develop materials for internal and external use
  - Based on version 14 SPSS
  - Screen-cast materials
  - Available on Open learn
  - Focus on 1 course (DSE212 – Exploring Psychology)
  - Intention to enhance interactivity and avoid static pages and screenshots



# Screen - casting

- Simple:
  - Record user action
- Annotated
  - Recorded action with written or audio commentary
  - Subtitles
- Complex
  - Branching story lines



# Some 2007/8 examples

- Example 1: Descriptive statistics
- Example 2: Menu demo



# 2010

- Faculty drive to avoid 'cottage industry production' and bring more materials online
- Centralised study materials
  - Increased use of VLE
  - Streamlining of assignment booklets
  - Centralised updating
  - Enhanced experience via online delivery
- Four psychology, 1 economics UG course and 1 masters course in development
  - Based on PASW SPSS version 18
  - Reworked in generic style.



# OU online SPSS guide

- Chapter 1:  
<http://learn.open.ac.uk/mod/oucontent/view.php?id=492517&direct=1>
- Chapter 2:  
<http://learn.open.ac.uk/mod/oucontent/view.php?id=492518&direct=1>
- Chapter 3:  
<http://learn.open.ac.uk/mod/oucontent/view.php?id=492688&direct=1>
- Chapter 4:  
<http://learn.open.ac.uk/mod/oucontent/view.php?id=492705&direct=1>
- Chapter 5:  
<http://learn.open.ac.uk/mod/oucontent/view.php?id=492722&direct=1>

<http://learn.open.ac.uk/mod/oucontent/view.php?id=492528&direct=1>

Chapter 2:  
<http://learn.open.ac.uk/mod/oucontent/view.php?id=492528&direct=1>

<http://learn.open.ac.uk/mod/oucontent/view.php?id=492528&direct=1>



DSE212-10J SPSS guide – Chapter 2: Creating data files and obtaining descriptive statistics - Windows Internet Explorer  
<http://learn.open.ac.uk/mod/oucontent/view.php?id=492518&direct=1>  
 Norton - Cards & Logins

DSE212-10J SPSS guide – Chapter 2: Creating data files and obtaining descriptive statistics: 3 - Windows Internet Explorer  
<http://learn.open.ac.uk/mod/oucontent/view.php?id=492518&section=3.3>  
 Norton - Cards & Logins

DSE212-10J SPSS guide – Chapter 5: Performing statistical tests using SPSS: 4.5 Independent-samples t-test - Windows Internet Explorer  
<http://learn.open.ac.uk/mod/oucontent/view.php?id=492722&section=4.5>  
 Norton - Cards & Logins



DSE212-10J

**Contents**

- 1 An introduction to data analysis
- 2 How to use SPSS
  - 2.1 Overview
  - 2.1 Overview
  - 2.2 Step-by-step
- 3 Obtaining statistics
  - 3.1 Overview
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  - 3.2 Step-by-step **continue**

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DSE212-10J > SPSS guide – Chapter 5: ... > 4.5 Independent-samples t-test:

**Contents**

- Chapter 5 Performing statistical tests using SPSS
  - 1 Introduction
  - 2 t-tests
  - 3 Performing a paired-samples t-test using SPSS
    - 3.1 How to enter your data in SPSS for a paired-samples t-test
    - 3.2 How to conduct the paired-samples analysis using SPSS
    - 3.3 Paired-samples t-test: activities
  - 4 Performing an independent-samples t-test using SPSS

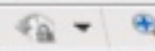
← Previous: 4.4 Step-by-step guide

## 4.5 Independent-samples t-test: activities

Below you will find descriptions and data from two more fictitious studies. You can enter these data if you wish to gain more experience with data entry. Alternatively, the data are available as files that came on the SPSS CD-ROM and they are also available on the module website.

In each case you should:

- 1 work out a suitable hypothesis
- 2 analyse the data using SPSS
- 3 record the key statistics from the output page
- 4 write a sentence in which you report the result.





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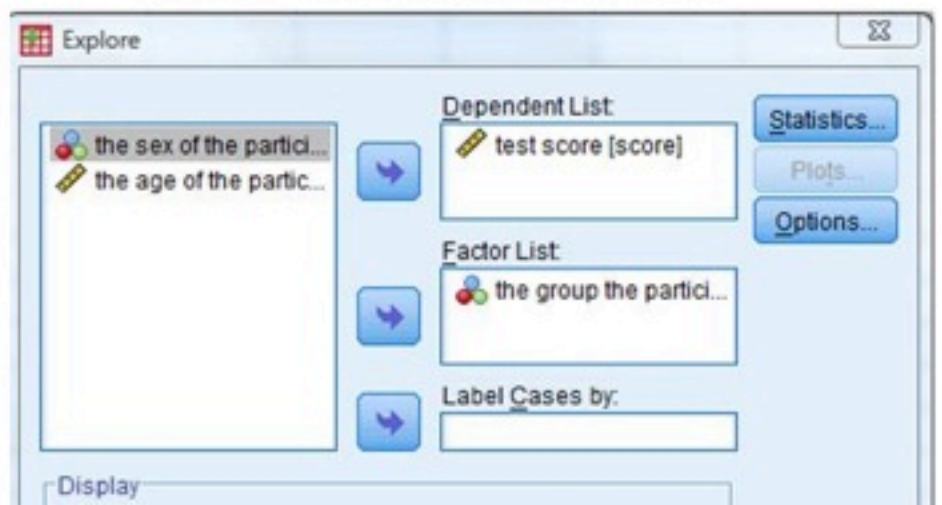
- 1 An introduction to basic data analysis
- 2 How to enter data using SPSS
  - 2.1 Overview
  - 2.1 Overview *continued*
  - 2.2 Step-by-step guide
- 3 Obtaining descriptive statistics
  - 3.1 Overview
  - 3.2 Step-by-step guide
  - 3.2 Step-by-step guide *continued***

[Printable version](#)

## 3.2 Step-by-step guide *continued*

8 You will first need to click on the 'Goto Data' icon that looks like a small grid with a red star on it, or click on **Window** on the top menu bar and select the data file. Like before, you should then click on the **Analyze** menu, then move the pointer down to the **Descriptive Statistics** sub-item, then select **Explore...**

COMPUTER **Explore** dialogue box appears.





# The bigger picture (2011+)

- SPSS teaching in a larger instructional frame (module->faculty)
- Learning stats based on solving problems using stats
  - Encourage active experimentation
  - Real world problems
  - New technologies & systems
    - Synchronous communication
    - Assessment systems
    - Delivery platforms

# Statistics & SPSS teaching in an online Multimedia world

- Ease of materials production
- Collaborativity affordances
- User expectations
- Interactivity and immersion
- Relevance
- Integration
- Course specific Personalisation
- Resource sharing, Re-use & Standards



# Thank You



## **Volker Patent**

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