Enriching Social Science with Quantitative and Survey Data Using Flipping

Wendy Olsen and teams at the University of Manchester
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www.ccsr.ac.uk
www.socialsciences.manchester.ac.uk/essted
Points to Be Covered

1. Our curriculum innovation: EMBEDDING QM
   - Comments and feedback
2. My own teaching innovation (FLIPPING)
   - Flipping by LECTORIALS
   - Comments and grades
3. Managing curriculum innovation
   - Specifying learning outcomes
4. Teaching mixed quant/qual methods
1. Our curriculum innovation

- **PIPS Component:**
  - Patterns in Politics & Society
  - Expanding the Enrichment of Social Science Classrooms with Quantitative Data & Quantitative Methods

- A Researcher Development Initiative of ESRC

- **CURRICULUM INNOVATION COMPONENT:**
  - Ten course units
  - Embedding and enrichment, not substitution
  - Teamwork
  - Now + QSTEP degrees “with quantitative methods”
  - Internships and reflective assessment
People (Sociology, Politics, Social Statistics)

- Mark Brown (Principal Investigator / senior teaching fellow)
- Jacqui Carter MIMAS and ESDS
- Jo Wathan ESDS and Census
- Steph Thomson (Research Associate)
- Ian Plewis AQMEN and RSS
- Tarani Chandola, Kingsley Purdam, Brian Heaphy, Andrew Russell
- Jen Buckley, Stefanie Doebler
Working Units

Cathie Marsh Centre / CMIST Institute

Five Disciplines

Q-Step Centre
Ten Course Units

NEW COURSES/METHODS
Data and the Media (University College: Ian Plewis et al)
The Survey Method in Social Research (Mark Brown)
Engaging Social Research  (BA in Social Sciences)

PARTNER COURSES: EMBEDDING QUANTS MODULES
SOCY10471 Sociology of Personal Life (Sue Heath)
SOCY20241 Sociology of Spiritual Life (Tej Purewal)
SOCY30461 Power and Protest (Gemma Edwards)
SOCY20962 Racism & Ethnicity in the UK (James Rhodes)

POLI20801 The Politics of Policy Making (Francesca Gains)
(POLI10200) Introduction to Comparative Politics (Nick Turnbull)
Methods of Embedding/Using

Building bridges between methods

This builds on scaffolding ideas

Students practice, practice... ...tacit learning

Active learning

Building up a number sense

Procepts = Process + Concept = Result  (See Briefing Paper 1 on Scaffolding At ESSTED website)
<table>
<thead>
<tr>
<th>Lives alone or not</th>
<th>Lives alone</th>
<th>others in hhd</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>satisfaction with life overall</td>
<td>missing Count</td>
<td>% within Lives alone or not</td>
<td>Count</td>
</tr>
<tr>
<td>completely dissatisfied</td>
<td>714</td>
<td>2.10%</td>
<td>243</td>
</tr>
<tr>
<td>mostly dissatisfied</td>
<td>1322</td>
<td>3.90%</td>
<td>295</td>
</tr>
<tr>
<td>somewhat dissatisfied</td>
<td>2252</td>
<td>6.60%</td>
<td>487</td>
</tr>
<tr>
<td>neither satisfied or dissatisfied</td>
<td>3136</td>
<td>9.20%</td>
<td>601</td>
</tr>
<tr>
<td>somewhat satisfied</td>
<td>5845</td>
<td>17.20%</td>
<td>1003</td>
</tr>
<tr>
<td>mostly satisfied</td>
<td>15323</td>
<td>45.10%</td>
<td>2287</td>
</tr>
<tr>
<td>completely satisfied</td>
<td>4673</td>
<td>13.80%</td>
<td>889</td>
</tr>
<tr>
<td>Total</td>
<td>33960</td>
<td>100.00%</td>
<td>6028</td>
</tr>
</tbody>
</table>

Coverage: United Kingdom. Weighted as a nationally representative sample.
For more information, see Persistent Identifier: http://dx.doi.org/10.5255/UKDA-SN-6614-3 or URL http://www.isds.essex.ac.uk/findingData/sdDescription.asp?sd=6614

The citation for these data is: University of Essex. Institute for Social and Economic Research and National Centre for Social Research, Understanding Society: Wave 1, 2009-2010, Data Archive [Distributor], February 2012. SN: 6614, http://dx.doi.org/10.5255/UKDA-SN-6614-3
Example – Use Excel.
Make Tutorial Exercise. Simplify!

Data from Understanding Society on Solo Living and Life Satisfaction 2010
Example of a Bar Chart, Year 2

Chart LMF1.6.F: Proportion of women among staff with managerial responsibilities, 2007

1) March 2009 for the United States. 2) and 3) see notes (4) and (5) for Chart LMF1.6.A
Example of a Complex Figure

(See Briefing Paper 2 on Social Data for Dissertations
At ESSTED website)
Sexual Identity
(Citizenship
Survey 2007)

Acknowledgement: Figure reproduced from Peter Aspinall (2009) ‘Estimating the size and composition of the lesbian, gay, and bisexual population in Britain’ Equality and Human Rights Commission Research report 37.
http://www.equalityhumanrights.com/uploaded_files/research/research___37___estimatinglgbpop.pdf
To make open-access online resources, one needs careful tracking of the URL and the Harvard reference of the source.

The authorship of the slide can get lost.

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Acknowledgement: Figure reproduced from Peter Aspinall (2009) ‘Estimating the size and composition of the lesbian, gay, and bisexual population in Britain’ Equality and Human Rights Commission Research report 37.

http://www.equalityhumanrights.com/uploaded_files/research/research__37__estimatinglgbpop.pdf
Feedback

1. Student usage of various methods such as histograms, bar charts, mean/median and t-test were assessed, and many students will willing to use these methods, and had some experience--They perhaps recall their GCSEs.

2. Staff in Sociology/Politics were surveyed with the same questionnaire, and fewer of them had experience with using these simple methods.

3. Most staff wanted to use the methods.
Student Confidence is Erratic
Example 3: Line Chart

A man's job is to earn money; a woman's job is to look after the home and family?

Year 1 - Without Confidence Intervals

Year 2 - With Margin of Error

Year 3 - ask students to do the C.I.s
2. My own teaching innovation (flipping)

**Active Learning:**

Passive Learning is Passé

+ Problem of large class of 220
  Part of solution is to reduce size → 190 → 130 people
Flipping for you

Old Method
- Lecture
- SPSS Practicals
- One Tutorial
- Exam 90%
- 2 Assignments 10%

New Method
- Blackboard VLE
- Lecture seating groups of 4
- Activities in Lectorials
- Pod casts MP3, MP4
- Used the Visualiser
- Exam 80%
- Learning Journal 10%
- 2 Assts 10%
Pedagogy Principles

- ***Flip*** the lecture
  - TELL THEM IT IS A LECTORIAL
  - MANAGE THE STUDENTS’ EXPECTATIONS

- Use CAMTASIA or YOUTUBE VIDEOS?
- Use podcasts or MP3 or narratives on PPTs?

- Make learning outcomes more explicit for each task

- Even have learning outcomes for each *activity*
- Build-up of activities
- Reiterate key points of theory, and of empirics/interpretation

*Also add an element of reflective journal writing.*
Overview of a Flipped Lecture

- Students prepare 2 hours
- 5 min Aims (and Recap)
- 20 minutes Activity
- 10 min Discussion and Interpretation*
- 5 min Data Interpretation
- 5 min Summing-Up*
- 5 min Q&A
Results over two years

Old average mark 62  New average mark 72

Overall grade distributions:

2010/2011  Course work 69%
Exam average grade 60%.
Overall average grade 62%.

2011/2012  Coursework 57%
Exam average grade 75%
Overall average grade 70% overall.
60% of students reached 70% overall.
Just 5 fails out of 190 students.
Results - feedback

- **Old approach:** students not very satisfied,
  - Low attendance

- **New approach:** students not very satisfied,
  - Low attendance, but the students like having lectures captured on video
  - Strong revision period
  - Stronger peer support for learning
Online Support for Flipping
And Using More QD, QM

www.socialsciences.manchester.ac.uk/essted
Youtube Carries Our Videos
A Series of Workshops

Embedding Quantitative Data in Sociology

Politics Classroom with Flipping and Student Opinion Poll of Students

Examples
From classrooms in the discipline of Sociology

NESSTAR Demo and how to use More Data
3. Managing Curriculum Change

☐ The staff need support
  ■ QM in RDI was not meant to be for specialist methods teachers – it was meant to be for embedding QD in sociology, politics and elsewhere.

☐ The students need support
  ■ The idea of using quantitative data causes fear in some students

☐ Q-Step taking it further
  ■ Don’t confuse the message
A Variety of Adventurous Activities

<table>
<thead>
<tr>
<th>Advanced critical thinking</th>
<th>Bridge to Network Analysis</th>
<th>Activities for Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundational critical thinking</td>
<td>Building arguments</td>
<td></td>
</tr>
<tr>
<td>Active learning</td>
<td>Crossword for crosstabs</td>
<td>Ladder to regression</td>
</tr>
<tr>
<td>Building blocks (I)</td>
<td>Causality Discussion</td>
<td>What are claims?</td>
</tr>
<tr>
<td>Worked examples</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flip-teaching</td>
<td>Sociological data</td>
<td>Dealing with Glossaries</td>
</tr>
<tr>
<td>Getting data...</td>
<td>Gotcher Data!?</td>
<td></td>
</tr>
<tr>
<td>In-class data capture</td>
<td>Political data</td>
<td>When are quizzes useful?</td>
</tr>
<tr>
<td>Teachers’ specialist aids</td>
<td>Dealing with exams</td>
<td></td>
</tr>
<tr>
<td>Learning outcomes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Student Moves Around on Scaffolding

- Critical Reader of Data
- Maker of Tables, Graphs
- User of Microdata
- Rethinks, questions the usual interpretation
A Staff Impression of a QD Task

- We’d want to ... embed some quants in this course. We decided that we’d make the last [tutorial] hour much more workshoppy and they all set up into small groups. [We produced tables and line graphs of trends in political participation and] also about attitudes, so
  - do you trust the government,
  - do you think people that leave have like legitimacy

...[on the cover we put the references]

- In the workshop with the worksheet they basically had to try and work out for themselves what they thought the trends were. Actually when you look at the latest data, it does complicate this quite simplistic argument around whether young people are apathetic, because when you actually look at it, most people are apathetic [laughs]
Two Types of Student in Politics?

There was a group of students [in my politics course] that were really confident with the tables. They really enjoyed doing it, and then there was a group of students that freaked out basically, on seeing the tables --found it kind of difficult it even to engage with the data.

I think a lot of that was due to a lack of confidence and seeing so many tables [10-page handout].

--Some of them didn’t even know how to do the basics-- how to read the tables on a basic level

--They asked me “What’s that figure? What does that mean?”

Some people had to spend quite a lot of time maybe just concentrating on one table, one number.

Year 2 Politics Course
Variety of Learning Outcomes

Student Flexibility:
- Change to dual honours;
- Choose options
- Avoid having ‘no options’

Lecturer
Firmness About Trajectory

a. The lower stream

b. The higher stream

LIST OF LEARNING OUTCOMES (L.O.s)
Both groups: mean, median, mode, levels of measurement (eg. Ordinal), micro-data, online sources

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**The sociology stream**

- Critically assess conceptualisation
- Interpret Tables
- Crosstabs and Chi Squared Test
- Matching Theories to Measured Concepts
- Reading advanced empirical papers
- Isolate measurable concepts

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**.... And with QM/RM**

- Probability and Odds
- Confidence Interval
- The Central Limit Theorem
- Refuting a Theory
- Developing a Theoretical Alternative Interpretation of Data
- Treatment Effects
### Year 2

**The sociology stream**
- Critically assess theoretical schools’ evidence base
- Manipulate and interpret carefully selected microdata
- Study students’ own microdata from the class or Year group
- T-Tests and margin of error

**.... And with QM/RM**
- Regression Model
- Dummy Variables
- Non-Parametric Tests
- Logit Model
- Correlation vs Association Measures
- Reading Statistical Papers in Journals
- Interdisciplinarity

Both groups: hypothesis testing compared with induction; combining methods; data-lite in dissertations; citation of online sources; creating own Figures
Year 3

Both groups: data used in dissertation to illustrate, test, apply or develop theories; secondary vs primary data

The sociology stream
- Critically assess quality of literature used
- Lessons about sampling
- Manipulate and interpret graphs
- Scattergram, causality, correlation

.... And with QM/RM
- How a falsification approach affects the research design of a dissertation;
- Data analysis for reports;
- Micro-data subsets
- Multiple regression, collinearity, tests of goodness of fit
Enrich The LO List Even More

<table>
<thead>
<tr>
<th>Lower stream not low</th>
<th>Higher stream similar</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Epistemology from year 1 onward</td>
<td>□ Some points about falsification are not meant to be positivist.</td>
</tr>
<tr>
<td>□ Theory is a strength; ability to pinpoint key elements of a theoretical standpoint, and to critique a theory</td>
<td>□ Positivism has poor foundations. Realism or weak social constructivism better aligned.</td>
</tr>
<tr>
<td>□ By Year 3 able to construct an argument</td>
<td>□ Do not confuse them</td>
</tr>
<tr>
<td>□ Knowing about society</td>
<td></td>
</tr>
</tbody>
</table>

Do not suggest that there is a qual-quant schism, as it can cause epistemological confusion.
4. Teaching Mixed Quant/qual methods

MIXED METHODS RESEARCH INCLUDES QUANTITATIVE DATA

Social Network Analysis (Everett)
Cluster Analysis with Typologies (Byrne)
Visual Ethnography with Record Keeping (Pink et al.)
Content Analysis of Documents (Bauer & Gaskell)

Cited works are listed in my book *Data Collection*, 2012, Sage Publications
Mixed Methods Are Often QD/QM Too

- Example of factor analysis following a small exploratory interview study
  - Sequenced mixed methods (Cresswell)
  - Integrated mixed methods (Bergmann)

- Example of **Qualitative Comparative Analysis** based on secondary data (Ragin)
  - First expose to a small case-study table
  - Second students can study causality (necessary/sufficient!) in larger dataset

- Byrne and Ragin Handbook
Conclusions

* The lessons learnt include:
  - Don’t innovate too much too quickly
  - Involve team members
  - Be explicit
  - Support active learning

* There is a need for staff training and staff upgrading
* Recognition is needed for this effort
* Staff also liaise with quality assurance side
* Keep streams meeting up

* Thank you for listening