Jonathan Parker

Quantitative methods in social sciences

**24**

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**Introduction**

The UK is internationally renowned for the quality of its undergraduate education, and the almost universal requirement that students complete a large, final-year research project or dissertation plays a large role in that reputation. Despite the continuing strong support for undergraduate research across the academy, the status of methods teaching in the social sciences, particularly quantitative methods, has long been a cause of concern. A range of reports has proclaimed the need to boost quantitative skills among undergraduates (Commission on the Social Sciences, 2003; Higher Education Funding Council for England, 2005; MacInnes 2009; 2015; Rice and Fairgrieve, 2001). Surveys of social science disciplines such as sociology (MacInnes, 2015; Williams et al., 2008) and politics (Adeney and Carey, 2009; MacInnes, 2015; Parker, 2010) have found a lack of quantitative methods training across most programmes. MacInnes (2015) analyses data from the Futuretrack survey, which followed the cohort of students entering UK higher education in 2005–2006, and confirms that a large majority of students in the social sciences outside of economics used numerical data only ‘a little’ at most in their degree.

In an era in which the public has been subjected to campaigns of misinformation and there is widespread scepticism about science and the value of academic expertise, it is vitally important that undergraduates, particularly in the social sciences, are equipped with a basic level of statistical and **information literacy** as well as a the ability to carry out and critically analyse research (British Academy, 2012, 2015). While quantitative methods teaching in the UK faces some serious challenges, there has been much more interest in, and pedagogical research on, how to overcome these challenges. The knowledge base on how to effectively teach quantitative skills in either an individual class, module or whole degree has become much more developed. This chapter will describe the obstacles to teaching quantitative methods and then summarise what sort of consensus appears in the professional literature on how best to teach and develop these skills.

In response to the ongoing concerns over the quantitative skills in higher education, a range of initiatives have taken place over the past two decades to support this teaching. The UK’s Economic and Social Research Council (ESRC) has funded a range of teaching innovation projects on quantitative methods (many from the first stage are included in Payne and Williams (2011)). The Quantitative Methods Initiative was set up in 2009 to further boost the status and quality of quantitative methods teaching in the UK. First, Professor John MacInnes, University of Edinburgh was appointed as Strategic Advisor for Quantitative Methods Training. Following his report (2009) on the state of quantitative methods teaching, the **Q-Step programme** was launched, which is a £19.5 million initiative funded by the **Nuffield Foundation**, ESRC and the **Higher Education Funding Council England (HEFCE)**, designed to promote a ‘step-change’ in quantitative social science training. From 2013 to 2018, 15 Q-Step Centres alongside three affiliate institutions were established at universities across the UK to support the development and delivery of specialist undergraduate programmes in quantitative methods. Not only were new courses created, but specialist quantitatively trained staff were hired to support this teaching. Thus, the programme is intended to improve the quantity and quality of both staff and undergraduate students in quantitative methods. The difficulties faced in this area are widespread and well documented.

<INSERT Case Study 24.1>

**Case study 24.1: The UK Data Service [www.ukdataservice.ac.uk](http://www.ukdataservice.ac.uk)**

It is crucial that students practise data analysis as soon as possible, as practice is the key to learning how to do it well. The UK Data Service, funded by the Economic and Social Research Council (ESRC), is one of the best sources of data and resources for teaching in the UK. Its collection includes major UK government-sponsored surveys, cross-national surveys, longitudinal studies, UK census data, international business data, and qualitative data. Their website provides access to local, regional, national and international social and economic data. It is available to UK Access Management Federation (UKAMF) members, which includes students and staff from UK universities. Outside organisations that are federated members of this groups can also register.

The site is a superb repository of data sets covering a vast array of disciplines, particular methods, and a variety of survey questions. Its **NESSTAR** catalogue offers an easy way to conduct immediate, online analyses of these data sets. You can select variables from any data set and conduct crosstabs, correlations, and regressions. The data sets include:

* UK data, such as the Census, Crime Survey for England and Wales, British Social Attitudes, and British Election Studies.
* Cross national surveys, such as the Eurobarometer and European Election Study.
* Longitudinal studies, such as the British Household Panel Survey.
* International data from OECD, IMF, UNESCO, and the World Bank.
* Business data, including those provided by the Office of National Statistics.
* Administrative data, such as the National Pupil Database

The site also has a specific section of data sets for teaching purposes that includes:

* examples of real-life data collections, allowing students to engage critically with methods and methodologies with examples that are particularly appropriate for data analysis teaching of all types;
* data sets specifically designed for teachers and students, which include workbooks and other resources;
* case studies that describe how other teachers have incorporated data sets on the site into their own teaching;
* provision to register all your students in a class to gain access as a group.

There is a wide variety of support materials to help students gain access to data and analyse it. There is a student page that links to guides on:

* information about types of data;
* how to get started;
* FAQs;
* a guide on using survey data written for dissertation students.

There are also guides and video tutorials on:

* specific data sets;
* key topics on particular themes or subjects;
* particular methods and software;
* how to manage, explore, and cite data.

Finally, there are some excellent tools for exploring data online. You can display data in graphs, charts, and maps using these online tools, and there are video guides to help people use these tools.

The UK Data Service has many different sorts of resources that are valuable for any course analysing data of any kind and it is a great site to explore for all methods teachers.

Quantitative methods teaching faces a series of obstacles to student learning that undermine the systematic development of quantitative skills in the social sciences in a way that is not faced in the teaching of more substantive courses. These impediments to learning consist of student preparation prior to higher education, negative perceptions of quantitative methods that are widely held, a shortage of skills and support among staff, and an isolation of such teaching in the curriculum (Earley, 2014; Wagner et al., 2011). These difficulties are important to acknowledge and counter in order to effectively teach quantitative methods.

First, British students come to higher education with less of a background in maths than in almost any other OECD country. Early specialisation means that most social science and humanities students abandon maths by the age of 16. Only a small minority of students continues with maths to 18 and an even smaller percentage go on to enrol in social science subjects at university (MacInnes, 2009). The social sciences are seen as more allied to the humanities than the sciences (Williams et al., 2004). That lack of knowledge and experience of maths increases a widespread sense of anxiety about numbers among social science students that detracts from the student experience and performance and prompts them to avoid courses involving numbers (Earley, 2014; Onwuegbuzie, 2004). This unease with numbers is also shared among many staff members (MacInnes, 2009; Williams et al., 2004).

Negative perceptions among staff and students means that quantitative methods are largely confined to specialist courses, if they are required at all (Williams et al., 2016). The lack of quantitative analysis in most substantive courses means that there is insufficient time and experience developed for students to become familiar and proficient in its use (MacInnes, 2009; MacInnes et al., 2016; Parker et al., 2008).

Throughout the social sciences, the gold standard of analysis is the essay, which is required and practised by students throughout most of their coursework across almost all social science degrees. A similar commitment to developing skills in quantitative analysis is absent in disciplines outside of economics. This is particularly damaging for methods teaching, which is more demanding than subject-based courses because it requires learning complex abstract principles and processes separate from the substantive issues that interest students and inspired them to choose their course. Methods are a means to study any particular topic and do not provoke student interest in the same way.

The lack of methods teaching and practice as well as the widespread absence of numbers and their analysis throughout most of the degree sends a clear signal (MacInnes, 2015; Rice and Fairgrieve, 2001). Students can see that most staff do not use quantitative analysis in their teaching, even if a module is required for the degree. It is seen as a tedious and irrelevant requirement to be put behind you as painlessly as possible. Even worse, Williams et al. (2008) found that QM (quantitative methods) teaching was often focused more on knowledge of methods rather than practising how to use them. The use of hands-on approaches to data analysis in the teaching of quantitative methods is “nigh on pedagogical orthodoxy” (Kilburn et al., 2014), so the lack of it in methods modules is a worrying indictment of the curriculum. It is not surprising that students and many staff tend to regard quantitative methods as irrelevant to the discipline (Falkingham et al., 2009; MacInnes, 2009). Students dislike methods teaching because it is not perceived as immediately and obviously relevant to their academic work or career (Dyrhauge, 2014; Earley, 2014; Leston-Bandeira, 2013; Marfleet and Dille, 2005; Murtonen, 2005; Ryan et al., 2014). Consequently, traditional approaches to research methods (RM) classes attract poor student evaluations and disappointing learning outcomes (Leston-Bandeira, 2013; Marfleet and Dille, 2005; Ryan et al., 2014). Student hostility discourages staff from using quantitative data in their teaching, and students rarely use it in their final year projects (Williams et al., 2016), which further reinforces negative perceptions about methods.

**Interrogating practice**

1. Are quantitative methods required for the degree or are they optional?
2. How many modules require use of quantitative methods? How early are students introduced to methods? (The sooner the better to signal that it is important for the discipline.)
3. Why learn quantitative methods? To what purpose? What will students do with these skills after the module? (Students need to be clear as to their importance.)
4. What methods or analytical techniques do students need for a final project or dissertation?

Current state of the disciplines in the UK

MacInnes (2015) updates his survey of quantitative methods teachers in the social sciences and suggests that quantitative methods teaching has substantially increased since a previous survey in 2009 and is now in almost all programmes outside geography. However, that result does seems at odds with those from the **Futuretrack** survey of 127,000 student entering higher education in 2005–2006, which MacInnes analyses to show that only about a third of students in the social sciences outside of economics report using numerical data more than ‘a little’ in their degrees. The number of programmes teaching quantitative methods may well have increased, but it may also be the case that students still encounter very little teaching in their degree. The two surveys were undertaken over ten years apart, so the overall level of improvement is unclear, and the results are not incompatible. There may be a difference between the number of programmes teaching quantitative methods, the number of programmes requiring it of all students, and the number of programmes that embed this teaching throughout their degree. Parker (2010) found a similar gap between survey responses from quantitative methods teachers and actual degree requirements, so it is important to analyse what is required of all students in social science degrees.

A random sample of 40 universities was selected and each programme specification and module information on websites analysed for degrees in Business, Criminology, Economics, Politics, and Sociology for 2016–2017. Not all universities offer the degrees surveyed, so the total number of observations varies by subject. Degrees were analysed to find which required students to undertake training in quantitative methods and research methods more generally, and which included research design, the research process, and qualitative methods. Finally, all requirements for completing undergraduate research through projects or dissertations were also included (Table 24.1).

<INSERT Table 24.1>

**Table 24.1**

Variation of degree requirements across the social sciences in 2016

|  |  |  |  |
| --- | --- | --- | --- |
| **Discipline** | **% requiring quantitative methods** | **% requiring research methods** | **% requiring project or dissertation** |
| Economics | 100 | 21 | 74 |
| Business | 58 | 42 | 48 |
| Sociology | 86 | 100 | 82 |
| Criminology | 62 | 100 | 86 |
| Politics | 21 | 54 | 67 |

The results in Table 24.1 give some indication of the levels of consensus over quantitative methods. A majority of subjects outside of politics require their students to learn quntiative methods skills, though only sociology and economics require it in almost all degrees. There is further training in research methods required in all programmes for sociology and criminology, as well as more than half of politics programmes. The highest consensus is shown over undergraudate research, which is required of almost all programmes in economics, sociology and criminology as well as two-thirds of politics and almost half of business programmes.

The results demonstrate a clear commitment to research methods training and its application in the social sciences. There is also a clear commitment to training students in quantitative methods, though the extent to which this training is reinforced and practised is still an open question. This level of consensus is noteworthy because the official subject benchmarks for these subjects, outside of economics, do not indicate that students must have quantitative methods training or undertake research projects. These benchmarks are drawn up by the disciplines under the auspices of the UK’s **Quality Assurance Agency** to indicate what knowledge and skills all students should have when they graduate in a particular subject. The lack of any such requirements was noted as a problem for promoting better numeracy among students (MacInnes, 2015) but does not seem to have greatly affected this national consensus over degree structures. The one exception to this consensus is politics, which shows a distinct lack of enthusiasm for quantitive methods training as well as more general research methods training. It is also weaker than most other subjects on undergraduate research, so politics appears more resistant to any curricular structure than other subjects and is clearly an outlier.

**Interrogating practice**

1. A big problem with quantitative methods is that students perceive them as irrelevant. Are quantitative methods taught by staff from students’ home disciplines? If not, why not?
2. Can you provide student contact with teachers from their programme, either in lectures or, ideally, as seminar or workshop tutors?
3. Are the examples used in lectures, exercises, and assessments from prominent and interesting issues in the students’ discipline?
4. How current are these examples? Can you think of a way to incorporate examples that students see as ‘real’, such as surveying current student views or taking examples from the media?

Teaching quantitative methods

The good news is that the same lessons that apply to teaching effectively in any other class also work for quantitative methods teaching. However, the teaching of quantitative methods is different from other substantive topics in that it teaches a form of analysis rather than about a substantive topic. For undergraduates, it is a means to an end rather than a topic of interest on its own. Its unique aspect means there needs to be more attention given to overcoming obstacles than in substantive classes. There has been much more research and progress made in the scholarship of learning and teaching quantitative methods. The clear difficulties in teaching and learning quantitative methods has led to much more focused interest and attention in recent years.

A more developed research literature has grown in recent years, with shared notions of a pedagogy of research methods (Earley, 2014; Garfield and Ben-Zvi, 2007; Kilburn et al., 2014; Lewthwaite and Nind, 2016; Murtonen, 2005). The growing consensus over particular principles can guide teachers to improve student outcomes in quantitative methods. This advice will appear familiar to most students of the scholarship of teaching and learning in higher education, as much of the advice also applies to higher education teaching in general.

**1. Make it relevant**. Students often perceive quantitative methods as irrelevant to their academic work or career, leading to a lack of engagement or lasting retention of knowledge and skills. There are a number of ways to address this problem:

**a) Focus on the discipline** (Healey, 2005; Leston-Bandeira, 2013). Most degrees are concentrated on a single discipline, which students choose to pursue at university. Examples, research questions, and coursework taken from outside the discipline will not be as effective at engaging students’ interest and reinforces a misperception that methods are irrelevant to their degree. The logic of this approach discourages teaching to wider, faculty-wide conglomerations of disciplines in one group. It may be efficient to deliver methods to any degrees at once, but it is not conducive to effective teaching or learning. At the very least, smaller group teaching in such larger classes should be organised by subject or discipline to emphasise its link to research methods.

**b) Use relevant, ‘real world’ examples**. Students often express confusion about why they are doing particularly abstract or detached statistical exercises that they do not connect to recognisable research questions in their field. Use current, exciting, and recognisable examples from your own field and ruthlessly cut any that aren’t. Examples from the current news, data from the students themselves, or the top issues in your field can bring the subject alive and show students why these skills are important (Bailey, 2018; Carey and Adeney, 2009; Carlson, 2009).

**c.)Teach skills that will be used in the degree**. What techniques are used in subsequent classes? What methods do students use in their dissertations? Are there particular skills needed for the most common career paths for this subject? The phrase ‘use it or lose it’ is applicable here, and if students don’t apply skill, which is particularly difficult to learn, again, in their degree, then why is it being taught? If it is particularly important for their career, then it should be reinforced through repetition throughout the degree and not simply be encountered one time in a module. To do otherwise suggests that it isn’t so important, and students will note that message and react accordingly.

**d) Use previous student papers as exemplars**. Sample papers and model answers are used in many higher education settings to help students gauge expectations and better understand what they need to achieve. The confidence from that knowledge is even more important for methods teaching. Leston-Bandeira (2013) effectively used this technique by showing past student research proposals, which was the final assessment for that module. Showing students what they need to do helps them learn, and demonstrating what their peers have accomplished demystifies the process and makes it seem more achievable.

**2. Learning by doing**. Give students first-hand experience of the research process. These are distinct examples of active learning techniques, but they are particularly important for teaching research methods.

1. **Get to data analysis quickly** (Bailey, 2018; Kilburn and Wiles, 2014; Lewthwaite and Nind, 2016; Williams et al., 2004). Do something interesting with data right away that connects data to real world problems and the important issues of the discipline. Making quantitative analysis appear relevant and important for solving problems is effective for getting students engaged (MacInnes, 2009; Scott Jones and Goldring, 2014; Williams et al., 2004). Repeatedly practising data analysis is also important for making students more comfortable and confident with using numbers. Practising can also allow students to better master the skills required and retain the knowledge beyond the end of the module (Adriaensen et al., 2015).
2. **Tackle exercises and projects in collaborative groups** (Garfield and Ben-Zvi, 2007). Statistics anxiety is a real problem that undermines student achievement in the teaching of quantitative methods. Collaborative learning is an effective way to get students working on difficult topics without sending their anxiety levels so high that it detracts from their learning. Students who work collaboratively demonstrate a better grasp of the material and perform better on assignments than students in traditional lecture-based teaching (Keeler and Steinhorst, 1995).
3. **Make sure there is ample support by ‘scaffolding’ resources**. Scaffolds are frameworks to support learner needs (Schmidt et al., 2015). They can involve resources developed in advance, such as handbooks for exercises that provide worked-up problems to show students how to proceed (Clark and Foster, 2017), questions to guide students in how to analyse a data set (Gunn, 2017), or exercises to ease mathematics anxiety through formative quizzes and a narrative approach to using numbers (Scott Jones and Goldring, 2017). They can also involve teacher interventions to support students as problems arise during classes. Providing lots of support materials to guide students through their work can ease their anxiety, help them focus less on the process, and engage them more with the material.
4. **Embed quantitative skills throughout the degree**. Much of the literature notes the importance of embedding quantitative content in all of the curriculum rather than isolating it in specialist methods modules (Gunn, 2017; MacInnes, 2009; Parker et al., 2008; Scott Jones and Goldring, 2017; Williams et al., 2004, 2016). Students need to apply ideas to new situations and use these skills over and over again to effectively learn them (Garfield and Ben-Zvi, 2007). Specialist modules on methods do not provide enough curriculum time to effectively learn these skills, so they must be spread throughout the degree in order for students to practise them, to get experience in making mistakes and improve their performance, and to see that this sort of analysis is an important part of their degree and discipline. Social science programmes would never provide only one opportunity for students to write an essay in a degree, so why should quantitative analysis be treated any differently?

**3. Student centered learning**. This approach is more than just using active learning. The particular backgrounds of students, the context of the degree and what skills are required, accounting for how students learn, and being aware of the particular challenges of methods teaching all play a part in keeping the student uppermost in the focus of how to plan the curriculum and teaching of research methods.

1. **Be aware of students’ attitudes, prior attainment, and educational backgrounds**. How much maths training have students experienced? Is it diverse or fairly uniform? Very few social science students have taken maths after GCSE, and you should pitch expectations appropriately. Be aware of maths anxiety and plan your teaching to try to alleviate it. Test student awareness at different points to make sure they have learned what you think they have learned. It can take more time than you think to fully absorb statistical concepts, and you often need to understand earlier concepts before moving on to others. You may need to revisit topics that cause students to struggle.
2. **Declutter** (Bailey, 2018). It takes time to properly teach and learn mathematical skills. There is a tendency to cram too much content into a module to get students to do more advanced forms of analysis, but this approach is self-defeating (MacInnes, 2009; Williams et al., 2008). Students learning improves if they become aware of, and confront, their errors in reasoning. Build in the space for students to recognise and analyse how and why they make mistakes before a final assessment. They need time and practice to understand even basic concepts, so classes should not be paced too rapidly. Have additional resources or guidance for students to consult if they are unsure or confused about the material. You don’t have to set the pace to the slowest learner, but you do need to plan for the students to learn at different paces. There has to be space in the curriculum and help for the students who are struggling to catch up (Scott Jones and Goldring, 2017). Don’t try to do too much. Again, focus on what they will need to use in the degree.
3. **Help students construct their own understanding of the content**. No matter how clearly a book or lesson tells about or illustrates a concept, students will only understand the material after they have constructed their own meaning for what they are learning (Garfield and Ben-Zvi, 2007). Involving students in the design of research projects can provide students with more ownership of the process. They can choose their own topics, conduct literature reviews, define their own questions, create the design and application of the project, which involves them more in the whole learning process. That ownership keeps them more engaged but also helps them construct a deeper understanding of the skills they are developing, which also improves retention (Adeney and Carey, 2009; Leston-Bandeira, 2013).

**4. Teach methods as part of the research process**. Teaching students methods as part of the whole research process gives them a much deeper understanding of what they are doing and why they are doing it. Highly specialised methods or statistical techniques can often be taught with little reference to their context, which makes them seem like an abstract exercise with little understanding of their relevance, wider applications, and how they fit into a larger process of research and knowledge construction.

1. **Signpost each element of the module and how it fits into the whole**. Students often have little understanding of the process of planning, implementing, analysing, and evaluating projects (Dickovick, 2009). They often see methods as disconnected from substantive issues in the discipline. In order to bring this process to the fore, each lecture, workshop, seminar, or lab should be preceded by an explanation of where it fits in the sequence of content and how it fits into the whole. This provides more context to the students, helps them to see why they are learning this material or technique, and demonstrates its wider relevance (Kilburn et al., 2014; Leston-Bandeira, 2013;
2. **Make the research process more visible**. There are different approaches to making this activity more obvious. Burkey and Burkey (2009) use clips from the Mythbusters series to illustrate principles of research enquiry. Ryan et al. (2014) use podcasts of academics discussing their own methodological choices and approaches to their research. Leston-Bandeira (2013) uses an online forum to let students discuss how to construct research questions and also required reflective statements on how they went about creating and carrying out their research projects. Providing multiple perspectives can also help (see Case study 23.2). You can discuss researchers’ methodological standpoints by critically evaluating issues of ontology and epistemology and how they affect decisions about research questions and how they are conducted (Nind and Lewthwaite, 2018).

<INSERT Case Study 24.2>

**Case study 24.2: Quantitative methods initiative www.quantitativemethods.ac.uk/**

This website is a great gateway linking to lots of different resources on the web. It is an excellent place to find links to useful sites, information, and case studies. The quantitative methods initiative is a wider effort established to improve training and methodological development and innovation in the social sciences, co-funded by the Higher Education Funding Council for England (HEFCE), the British Academy, and the Nuffield Foundation. Its most prominent activity is the Q-Step programme, but this website is part of its wider effort to support quantiative methods training and teaching.

It has a section on learning resources that links to pages on topics including:

* Why study qunatitative methods or statistics?
* Data analyisis.
* Visualisation.
* Probability and risk.
* Data repositories.
* Blogs and discussion sites.
* Statistical literacy.
* Statistics and the law.
* Workshops for teachers of quantitative methods.

There is a list of links to websites with advice or resources for learning about particular software packages, such as **SPSS**, **Stata**, or **R**.

There is a set of links to videos and podcasts about quantitative methods.

**Interrogating practice**

1. The best way to learn quantitative methods is to do quantitative analysis. How do you get students working with data?
2. Do they get a chance to practise or repeat particular techniques for forms of analysis in order to learn from mistakes and develop more confidence?
3. How much support is available for undertaking data analysis? Have the students seen an example of how to carry out this task through a demonstration or a worked-up paper?
4. Is there enough time in the curriculum for students to learn and apply their lessons? Remember that less is more.

<INSERT Case Study 24.3>

**Case study 24.3: ‘“I’m not a natural mathematician”: inquiry-based learning and quantitative methods teaching’**

Dr Liam Foster and Dr Tom Clark (2017) document the development of methods provision in the in the Department of Sociological Studies at the University of Sheffield since 2008. Their article, which begins with the above quote from one of their students, tracks the shift in the structure of undergraduate degrees towards a more inquiry-based approach in both the purpose and structure of the degree as well as the teaching provided in it. The article is an excellent description of how change occurs within a department, with different shifts over time and further changes following from the lessons learned at each point. It also demonstrates many of the key points of consensus in the literature on the teaching of quantitative methods at both the programme level and within each module and class. Evaluations of student feedback and outcomes suggest that the changes have proved very successful, though the authors carefully note the limitations of these measures of a single department case study. The article outlining these changes provides a wealth of examples for anyone seeking to improve methods teaching.

The authors identify three key lessons from this experience:

* First, programme level approaches to the curriculum are crucial in improving quantitative skills.
* Second, indifference or hostility among students towards quantitative methods occurs due to disenfranchisement that happens both before and during students’ engagement at university.
* Third, meaningfully engaging students as partners helps to overcome these barriers.

**Course structure and the ‘methods spine’**

Quantitative teaching must be treated as part of a whole system of teaching and learning that is suitably embedded in the programme curriculum and clearly articulated for students.

<INSERT Table 24.2>

**Table 24.2**

Modules within the methods spine

|  |  |  |  |
| --- | --- | --- | --- |
|  | 2002–2009 | 2010–1023 | 2014–present |
| Level 1 | Introduction to social research (10 credits) | Introduction to social research (10 credits) | Introduction to social research (10 credits) |
|  |  | Doing sociological research (10 credits) | Doing sociological research (10 credits) |
| Level 2 | Social research methods (20 credits) | Social research methods (20 credits) | Doing quantitative sociological research (20 credits) |
|  |  | Social research practice (20 credits) | Doing qualitative sociological research (20 credits) |
| Level 3 | Dissertation (40 credits) | Dissertation (40 credits) | Dissertation (40 credits) |

Initially, additional modules were developed to focus on the practice of research. They provided so successful that the practice element expanded to make both second-year modules inquiry-based. The teaching of every module has also shifted over time to adopt primarily inquiry-based learning techniques. The methods component of the degree is focused on doing research in preparation for the dissertation.

Research skills are progressively sequenced in both scope and depth over the length of the course. Assessments are diverse and spread skills development across many modules and include project reports, research posters, dissemination websites, reflexive journals of the research process, oral presentations, and research proposals. Formative tasks include literature searches and ethical approval applications. Students get multiple opportunities to practise these skills, completing five research projects by the end of their degree, which culminates in a 15,000-word dissertation.

In teaching the quantitative methods component of the research process, the key aim is to equip students with theoretical and practical foundations to conduct independent quantitative research. There is a clear goal; it is communicated clearly and embedded in the structure of the degree. This classic use of constructive alignment progressively builds the learning outcomes in pursuit of this goal in a logically planned pattern.

The assessments for the second-year module include a group poster using student generated survey data to respond to a specific research brief; second is an individual project report based on analysis of secondary data from **ESDS** (see Case study 23.1).

A key innovation for this module is the use of workbooks, which were developed in two stages using focus groups of students. The workbooks integrate a number of worked ‘by hand’ examples drawn from the data sets provided by ESDS while also providing a step-by-step guide to analysing the data using PASW (IBM SPSS). They are designed to be narrative rather than mathematical, to better communicate the concepts to students with no recent mathematical background. The five workbooks cover a range of techniques that novice researchers need to carry out quantitative projects, which include:

1. Research rationales, research questions, and research hypotheses.
2. Designing variables and understanding levels of measurement.
3. Describing data.
4. Using chi-square, phi and Cramer’s V.
5. A guide to analysing data using PASW (IBM SPSS).

These workbooks were created with support from the Higher Education Academy and can be accessed at: <www.social-policy.org.uk/uncategorized/doing-quantitative-research-workbook-resources/>

And a final case study, which the reader should find useful, particularly its YouTube and methods links, is offered in Case study 24.4 below.

<INSERT Case Study 24.4>

**Case study 24.4: Dr Graham R. Gibbs – website and YouTube channel**

Dr Graham Gibbs is a National Teaching Fellow and Reader in the Department of Behavioural and Social Sciences, University of Huddersfield. He has been a highly active participant in many of the efforts to improve, innovate, and create resources for the teaching of research methods over the past two decades.

His YouTube site ([www.youtube.com/user/GrahamRGibbs/featured](https://www.youtube.com/user/GrahamRGibbs/featured)) contains links to a very large collection of videos on many different research methods topics. These range across many topics, including general approaches to methods and design, qualitative methods, quantitative methods, and practical considerations in carrying out particular types of research.

He is also part of the team responsible for the website Methods: Social Research Methods Educational Resources and Resources Reviews, which is hosted at the University of Huddersfield (<http://methods.hud.ac.uk>) and was largely produced as part of the outputs from the ‘Discovering Collections of Social Science Open Educational Resources’ project. This website has links to reviews, external sites helpful to teachers of research methods, and many open educational resources which are indexed by topic.

The website and YouTube channel provide a huge amount of content and links to further resources that are a great place for research methods teachers to browse and find help with particular topics.

**Overview**

Quantitative methods skills are recognised as important skills that are needed more than ever in the contemporary world and workplace by disciplinary bodies, government agencies, and employers. The challenges of big data, fake news, and an increasingly complex and interconnected society call out for increasing levels of analytical skills in our graduates. The increasing emphasis on employability in higher education means that this area will continue to receive much attention in the social sciences. The TEF is putting more and more weighting on such criteria when evaluating the quality of teaching. While anyone trained in quantitative methods might take issues with the validity of such measures, they do put issues of student employment firmly on university agendas, and quantitative skills are one of the qualities that can help students find employment and succeed in those roles. Despite this increasing importance, the teaching of quantitative methods continues to show worrying problems.

The lack of attention to, or application of, quantitative methods in classes throughout the degree is one of the most damaging aspects of teaching in this area. The embedded culture of each discipline in how it treats quantitative methods throughout all of its teaching determines how its importance and relevance is signalled to students. The lack of quantitative analysis in substantive topics outside of a required methods module speaks volumes to students, regardless of any official line. Its relevance and usefulness is clearly demonstrated by how often it is used to analyse social science topics throughout a degree.

On the bright side, we are more aware than ever of the problems faced in teaching quantitative methods and how to address them. The increased levels of support for this teaching and research into how to carry it out more effectively have resulted in a much better knowledge base. There is a wider research literature in each discipline that contains different innovations and approaches that can be used or adapted by the classroom teacher. There are more training opportunities and a better network of communications that allow more contact between staff who carry out this sort of teaching. Advice and support for teaching quantitative analysis is more available than ever. While not an easy field in which to teach, these challenges develop a peculiar quality of teacher who has be on top of their game more than in other subject areas. It is also extremely rewarding and provides entry into a group of the most creative, innovative, and inspiring colleagues that I could hope for.

**Further reading**

[www.StatLit.org](http://www.StatLit.org) The primary goal of this site is to present statistical literacy as an interdisciplinary activity. It involves quantitative reasoning, quantitative literacy, numeracy and statistical reasoning. The site features books, papers and activities related to statistical literacy – taken broadly from a variety of disciplines. Those in one discipline may be unaware of what those in other disciplines are doing. This site tries to bridge those disciplinary boundaries and provide a single source for related materials.

<https://serc.carleton.edu/nnn> The National Numeracy Network promotes education that integrates quantitative skills across all disciplines and at all levels. The website contains a link to teaching resources, which has a host of linked sites that contain guides, examples, and approaches from across a range of institutions (largely in the US).

[www.psa.ac.uk/psa-communities/psa-teaching-quantitative-methods-network](https://www.psa.ac.uk/psa-communities/psa-teaching-quantitative-methods-network) The Political Studies Association maintains a Teaching Quantitative Methods Network, which has links to teaching resources. It also has a set of short case studies that highlight good practice in teaching quant methods in the social sciences, which are excellent resources for teachers who want to see what others have tried and how it worked out. These case studies are refreshingly honest about the obstacles and difficulties faced in trying to implement innovative ideas and provide an excellent resource for any quantitative methods instructor thinking about developing their teaching or curriculum.

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