

Large-scale data sets: A resource for testing hypotheses in education

Many hypotheses arising from educational research await rigorous appraisal, and large-scale datasets available in the UK provide a resource for analyses that aim to do just that. The work of the Centre for Research on the Wider Benefits of Learning (WBL) explores the effects of education on personal and social development, leading to hypotheses that can be tested in large-sample, longitudinal and panel data.

- The current large-sample datasets housed in the UK Data Archive are overly focused on individual or household-level trajectories.



Develop better modelling of social structures in these large-sample datasets, and of educational institutions such as schools and colleges.

- The availability of large-scale matched data sets, particularly those that enable the linking of pupils' attainment across key stages, provides an opportunity to test a range of hypotheses.



Educational researchers should be familiar with the ADMIN centre (Administrative Data: Methods, Inference & Network) which disseminates guidance on making the best use of administrative and survey based longitudinal data (see box on centre pages).

- Two research priorities are to achieve a multi-layered understanding of social reality, and to recognise how the characteristics of individuals and their context change over time.



These priorities fit well with the purposes of longitudinal and multi-level research designs.

- Econometricians and statisticians are not always aware of the important questions emerging from educational research; and researchers from other disciplines are not always well-placed to develop the most effective research designs.



Support forums for promoting dialogue and understanding amongst educational researchers from a wide range of disciplines.

The research

The data sets

The UK has a large number of secondary data sets available to education researchers, including the Millenium Cohort Study (MCS), the National Child Development Study (NCDS), the British Cohort Study (BCS70), the Labour Force Survey (LFS), the British Household Panel Survey (BHPS), and the Longitudinal Survey of Young People in England (LSYPE). Administrative data sets, notably the National Pupil Database (NPD), also provide significant opportunities for quantitative researchers in education. However, the NPD has only limited information on pupil family background, and it is therefore important to link it to other datasets such as the LSYPE and the Avon Longitudinal Study of Parents and Children (ALSPAC). Whilst this makes for a reduction in sample size - perhaps from half a million in an NPD year group to a few thousand in ALSPAC - it also means richer data, including information about attitudes, aspirations and family circumstances.

The availability of large-scale matched data sets, particularly those that enable the linking of pupils' attainment across key stages, provides a major new opportunity to test a range of hypotheses, including hypotheses about the impact of different types of schools (selective, faith, specialist) on attainment. It also provides opportunities to analyse policy reforms, allowing for comparisons between the impact of reforms which are applied in some areas but not in others. The availability of these options depends upon the enormous current development of computer power and software, which enables complex statistical exercises such as multilevel modeling.

When the use of large scale datasets is problematic

There are some questions which we might be able to pursue only with better or additional quantitative data, and others which might be inherently difficult to address by making use of these data sets.

Relationships between teaching and learning, teachers and learners, and pupils and their peers, are not easy to capture quantitatively. This has been achieved, but there is extensive

unexploited potential in the existing data sets on teaching and learning. There is also potential for mixed-methods analyses, drawing on existing quantitative data and using it as a basis for further qualitative analysis.

High-quality, large-scale datasets on the workplace are rare. The only data set with matched employer-employee data is the Workplace Employee Relations Survey (WERS), but WERS contains only very limited information on learning in the workplace. Learning and Training at Work (LTW) is a richer data set but contains no data later than 2002. There are also smaller-scale datasets such as the TLRP Learning in the Workplace study, which has rich data on 567 learners, training and line managers from 53 workplaces and 36 tutors. In the workplace context a fruitful analytical strategy will require not simply reliance on existing secondary data, but a mixed-methods study that includes a combination of primary data collection and qualitative fieldwork.

We now describe two disparate examples of how emerging hypotheses in education might be developed in the context of large scale data sets.

Case Study: The WBL social capital project

The WBL social capital project (Stevens et al. 2007) relies on qualitative and quantitative data analyses to explore the factors and social processes that relate to the development of young people's social capital in two multicultural, inner-city secondary London schools. In addition, it explores how young people's social capital relates to educational and wider outcomes. This project focuses on different forms of social capital: students' sense of school belonging

and close relationships with others (bonding social capital), their attitudes to diversity (bridging social capital) and their support networks.

An ecological approach is employed, focusing on factors and processes at different levels of analysis, including students' social background, their peer-group relationships, and school and neighbourhood processes and characteristics. The analyses rely on qualitative interviews with students and staff, and on a cross-sectional school survey of 75 per cent of the students in our two secondary schools.

The findings suggest the importance and interrelated nature of school characteristics and social processes in developing young people's social capital. Students considered themselves more part of a school community when they felt safe, accepted and supported, and when they were being treated fairly by staff and students. However, while both schools had on average a similar level of students' sense of school belonging, they seemed to develop this through different channels. In the more 'strict' school students claimed to feel safer and to receive more support from staff, while their peers in the more 'liberal' school felt that the rules in their school were fairer. While this suggests that schools can implement different strategies to raise students' sense of school belonging, the analyses also indicate that such strategies relate to the particular ethos that characterises each school. Furthermore, the composition of the school's student population appeared to influence young people's attitudes to diversity (bridging social capital). In both of these multicultural schools, cultural diversity was generally valued by students, but

ADMIN (Administrative Data: Methods, Inference & Network) aims to exploit newly linked administrative and survey longitudinal data, in order to develop and disseminate methodology for making the best use of administrative data and reassessing how best to deal with some of the common problems associated with using survey-based longitudinal data. The research programme develops innovative methodological approaches for using administrative data when covariates or responses are missing, and using longitudinal survey data when there are problems with measurement error, item non-response and attrition. ADMIN researchers develop innovative methodological approaches to analysing administrative and survey panel data by addressing substantive research questions in the areas of education, economics and social policy. ADMIN also builds capacity in using administrative data through training courses, web-based materials, fellowships and studentships, as well as by developing an international network of researchers.

ADMIN is a node within the ESRC National Centre for Research Methods. For further information contact Sarah Patel at s.patel@ioe.ac.uk or 020 7612 6349

diversity in terms of sexual orientation was regarded more negatively.

While this study was not designed to test causal effects, it shows that different forms of social capital are positively associated with each other and with students' socio-psychological resources. This was particularly the case for students' sense of school belonging, which strongly and positively associates with other forms of social capital and students' self-concept of ability, their self-efficacy, self-esteem and low levels of stress.

Case Study: Bourdieu's theory of practice

At a TLRP-organised seminar on the work of Pierre Bourdieu, participants discussed the utility of his theory of practice and related concepts for TLRP research and educational research more generally. The seminar included a discussion of applications of Bourdieu's theory by Sullivan and Crozier.

Sullivan sought to assess the social reproduction theory associated with Bourdieu. Data from an original quantitative survey, designed to test Bourdieu's theory of social reproduction, suggests that differences in attainment between different social classes cannot be attributed to differences between social classes in terms of their access to 'highbrow' forms of cultural capital such as knowledge of composers of classical music. Her findings cast doubt on Bourdieu's thesis that differential access to forms of cultural capital – those that are arbitrary in relationship to educational attainment – can account for differences in educational attainment between social classes.

Crozier employs Bourdieu's theory of practice and related concepts to explore students' choices in relationship to higher education, in particular the processes that can help to explain the observed variability in HE choices between students of different social classes. In addition, she investigates the characteristics of universities and colleges that differ in terms of their social class intake.

Her research suggests that students tend to choose a university in which the student population is more familiar in terms of social class. Furthermore, middle class students appeared much better prepared than working class students at making HE choices and at fulfilling the expectations of HE institutions. She also found that technical colleges with a high working-class intake appeared stricter in respect

Major implications

Social capital project

One of the limitations of this study is that it concerns a cross-sectional analysis of processes and factors related to the development of social capital, and wider outcomes, for students selected from two particular schools. As a result, questions still remain about the causality of the statistical associations found. While the statistical analyses show positive associations between students' social capital and their socio-psychological resources, these relationships can be explained in different ways. Existing research suggests that social capital and socio-psychological resources positively influence each other, but we need to know about the detail and direction of these influences.

Longitudinal designs on large representative populations are better fitted to test causality by exploring changes in such characteristics over time. However, longitudinal research often relies on existing datasets which are rarely designed to measure all the characteristics of interest to researchers. This is almost inevitable. Longitudinal research requires that the same characteristics be measured over time and in exactly similar ways, and this has a limiting effect on the range and subtlety of the items measured. A strength of the WBL study is its use of highly specific measurement instruments, including 'sense of school belonging', 'attitudes to social diversity', 'close and supportive relationships', and 'socio-psychological resources'.

Pierre Bourdieu's theory of practice

Seminar participants agreed on the importance of adopting a multi-layered understanding of social reality, recognising the embedded nature of different contexts, which encompass both the individual (Bourdieu's 'habitus') and the wider social groups, settings and institutions in which actors participate (Bourdieu's 'fields'). The seminar brought out the importance of adopting a developmental approach that recognises how the characteristics of individuals and context change over time. Such a framework fits well with the purpose of longitudinal and multi-level research designs.

of regulating behaviour and following up students, while universities with a high middle-class intake seemed to offer their students more freedom and responsibility for their own learning.

Bourdieu's work and its applications draw attention to the difficulties attaching to measurement. When cultural capital is conceived as 'highbrow cultural traits' (museum attendance, or knowledge of painters and theatre performance (Bourdieu 1992, 1979)), research fails to provide strong support for his theory of social reproduction. On the other hand, when cultural capital is conceived less exclusively, and in terms that bear some relation to the educational context (work habits and linguistic competence, for example) cultural capital appears to have a significant, modest impact on educational attainment (Crook 1997 DiMaggio 1982; Farkas 1998; Kingston 2001; Sullivan 2001; Sullivan 2002).

This body of research presents a challenge for quantitative research in developing tools that are capable of measuring the concepts developed by Bourdieu, and in testing his theories through large-scale, quantitative data analysis. Meanwhile, Sullivan's study (Sullivan 2001) represents a unique example of how Bourdieu's theory of social class reproduction can be tested, and how various forms of cultural capital can be rendered amenable to measurement.

General

It is not obvious that the education research community is always well-placed to ensure that appropriate sampling frames and survey instruments are adopted in the research designs for these studies. Equally, econometrists and statisticians may not be aware of many of the important questions emerging from education research. While there is overlap between these two research communities, and some fruitful collaboration, there are also substantive and ideological disagreements that sometimes hinder discussion. It therefore remains a priority to continue the work of the TLRP programme in supporting and developing forums for promoting dialogue and understanding between these communities.

As a result, working class students appeared to develop a stronger HE identity in relation to their own HE institution.

Further information

For an overview of WBL research see 'The Social and personal benefits of learning: a summary of key research findings', Feinstein, L., Budge, Vorhaus, J., and Duckworth, K., WBL, 2008, available at www.learningbenefits.net/Publications/FlagshipPublications.htm.

For a selection of works cited in this briefing see also:

Bourdieu, Pierre. 1992 (1979). *Distinction. A Social Critique of the Judgement of Taste.* London and New York: Routledge.

Bourdieu, Pierre. 1999 (1983). "The Forms of Capital." Pp. 46-58 in *Education, Culture, Economy, Society*, edited by A. H. Halsey, Lauder Hugh, Brown Philip and Amy Stuart Wells. Oxford: Oxford University Press.

Crook, C. J. 1997. *Cultural Practice and Socioeconomic Attainment: The Australian Experience.* Westport, Connecticut: Greenwood Press.

DiMaggio, Paul J. 1979. "Review Essay: on Pierre Bourdieu." *American Journal of Sociology* 86: 1460-74.

Farkas, George. 1998. *Human Capital or Cultural Capital? Ethnicity and Poverty Groups in an Urban School District.* New York: Aldine De Gruyter.

Grenfell, Michael. 2004. *Pierre Bourdieu: Agent Provocateur.* London: Continuum International Publishing Group.

Jenkins, R. 1982. "Pierre Bourdieu and the Reproduction of Determinism."

Nash, R. 1999. "Bourdieu, 'Habitus', and Educational Research: is it all worth the candle?" *British Journal of Sociology of Education* 20: 175-187.

Stevens, Peter, Ruth Lupton, Tamjid Mujtaba, and Leon Feinstein. 2007. 'The Development and Impact of Young People's Social Capital in Secondary Schools' in *Wider Benefits of Learning Research Report 24.* London: Centre for Research on the Wider Benefits of Learning, Institute of Education.

Sullivan, Alice. 2001. "Cultural Capital and Educational Attainment." *Sociology* 34: 893-912.

Sullivan, Alice. 2002. "Bourdieu and Education: How Useful is Bourdieu's Theory for Researchers?" *The Netherlands' Journal of Social Sciences. Cultural Capital, Cultural Knowledge and Ability*

The warrant

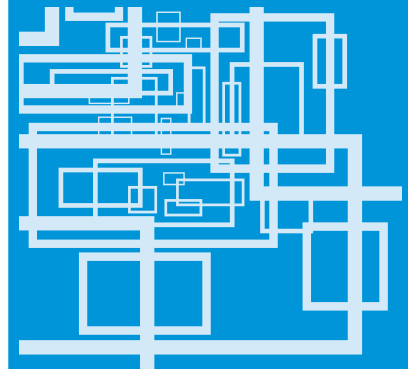
The Centre for Research on the Wider Benefits of Learning (WBL) is based at the Institute of Education, University of London. Its researchers represent disciplines including sociology, psychology and economics. They employ the full range of social science research methods, often analysing longitudinal data and combining quantitative and qualitative approaches.

Social capital project: the data were drawn from a mixed-methods case study of two schools in an inner London borough. Primary quantitative survey data were collected from most students in both schools (1,583 in total). This was supported by qualitative semi-structured interview data from 53 Year 10 students, exploring their experiences with and attitudes to their neighbourhoods, social diversity, sense of school belonging and social support. Year 10 students volunteered to be interviewed, and under-represented groups were approached to take part. Interviews with 20 members of staff were also carried out. These interviews covered their experiences of multi-agency working, extended services, the Every Child Matters agenda, social diversity in school, sense of school belonging and social support. Supporting secondary material, such as school documents and observations, was also used.

Bourdieu seminar: a one day TLRP seminar in 2007 explored the usefulness of Bourdieu's work for TLRP research. Leading UK experts, some with favourable and others with more critical views on Bourdieu's legacy, discussed the usefulness of applying Bourdieu's theory of practice and related concepts of habitus, field and cultural and social capital to TLRP research and educational research more generally. Participants included Michael Grenfell, Phil Hodkinson, Gill Crozier and Alice Sullivan.

Sullivan, Alice 2007. *Cultural Capital, Cultural Knowledge and Ability, Sociological Research online*, Volume 12, Issue 6.

Teaching and Learning Research Programme



TLRP involves some 90 research teams with contributions from England, Northern Ireland, Scotland and Wales. Work began in 2000 and the Technology Enhanced Learning phase will continue to 2012.

Learning: TLRP's overarching aim is to improve outcomes for learners of all ages in teaching and learning contexts within the UK.

Outcomes: TLRP studies a broad range of learning outcomes. These include both the acquisition of skill, understanding, knowledge and qualifications and the development of attitudes, values and identities relevant to a learning society.

Lifecourse: TLRP supports research projects and related activities at many ages and stages in education, training and lifelong learning.

Enrichment: TLRP commits to user engagement at all stages of research. The Programme promotes research across disciplines, methodologies and sectors, and supports various forms of national and international cooperation and comparison.

Expertise: TLRP works to enhance capacity for all forms of research on teaching and learning, and for research-informed policy and practice.

Improvement: TLRP develops the knowledge base on teaching and learning and collaborates with users to transform this into effective policy and practice in the UK.

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