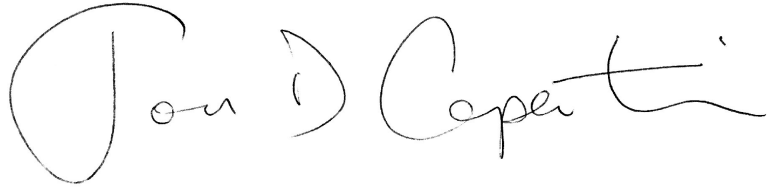


# **Producing credible evidence and relevant evaluations: Integrating skills and practices in the study of adult literacy and numeracy policies and programmes**

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## Declaration

I, Jon David Carpentieri, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

A handwritten signature in black ink that reads "Jon D Carpentieri". The signature is written in a cursive style with a large initial 'J' and a distinct 'D'.

## Acknowledgements

This PhD by Publication is the product of several years' research on a number of interesting and exciting research projects, only some of which could be discussed in this submission. My involvement in these projects would not have been possible without the support and confidence of my colleagues at NRDC (the National Research and Development Centre for Adult Literacy and Numeracy). I wish to offer particular thanks to David Mallows and Jenny Litster, who have been a true pleasure to work with, and to know.

Many thanks to my advisors on this PhD: Ann Hodgson and Karen Evans. Both have provided invaluable guidance.

Finally, and most importantly, my family. In the original draft of this Acknowledgements section, I thanked my wife and daughter for their encouragement and support. But when I showed them what I'd written, they laughed in my face – and rightly so. The truth is, I'd have finished years earlier without them. But my life would be far less rich. Here's to you, Wendy and Astrid. And here's to my mom as well.

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# Abstract

In this integrative paper I identify my contribution to the production of credible and relevant evidence in the fields of adult education in general and adult literacy and numeracy in particular. By 'credible evidence' I refer to evidence that can be believed (Schwandt, 2009). By 'relevant evidence' I refer to evidence that is useful to policymakers and programme staff. In describing my work, I draw on and extend Berriet-Sollicec *et al.*'s (2014) typology of three types of evidence that may be generated by research:

- *Type 1: Evidence of presence*, e.g. of a problem such as low literacy skills in adults. Publications 1-3 in my submission focus on this type of evidence.
- *Type 2: Evidence of impact*, e.g. the impacts of adult literacy programmes or policies on adults' skills or other outcomes. Publications 4-5 focus on Type 2 evidence.
- *Type 3: Evidence of mechanisms*, e.g. the causal processes through which adult literacy programmes may generate impact. Such mechanisms, in the form of literacy and numeracy practices, are discussed in Publication 6, as well as Publication 5.

In this paper, I analyse the complex relationships amongst these three types of evidence. In doing so, I show how the proliferation of Type 1 evidence on literacy and numeracy skills, such as that produced by international surveys such as the Program for the International Assessment of Adult Competencies (PIAAC), leads to greater policy emphasis on the generation of credible and relevant Type 2 evidence, particularly in the form of evaluations of programmes' impacts on those skills. I argue that while there has been increased emphasis on Types 1 and 2 evidence, a lack of policy focus on Type 3 evidence of key mechanisms (especially literacy and numeracy practices) through which adults may improve their literacy and numeracy skills leads to theoretically misinformed programme specifications and evaluations, with the latter producing Type 2 evidence that is at best

insufficiently relevant and is at worst non-credible. I then offer a strategy for producing evidence that is more credible, and more useful to policymakers and programme staff.

## Structure of this paper

This integrative paper is structured as follows:

- The first section of the paper provides an overview of the six publications included in this PhD submission. That section includes a discussion of my personal contribution to those publications.
- In the second section, I discuss the theoretical framework which underpins this integrative paper.
- The third section details the aims and objectives of my submitted publications. This section also describes the analytical objectives of the integrative paper itself – i.e. the ways in which the integrative paper adds to my published research and contributes to the field.
- The next section provides an overview of the policy context within which my research has been conducted. As described in this integrative paper, my research has been very policy- and programme-focused, seeking both to respond to policy needs and to support policy and programme development.
- The fifth section discusses Publications 1-3. A primary focus of these three publications is the generation of credible evidence of adult literacy and numeracy problems and their impacts. These studies thus help policymakers to define, quantify and respond to those problems.
- Section 6 focuses on Publications 4-5. The first of these two publications is a programme evaluation – i.e. an evaluation of a programme designed to address the problems (low adult literacy and numeracy skills) highlighted in Publications 1-3. Publication 5 is a more theoretical work, which addresses the tensions and challenges associated with generating credible and relevant evaluation evidence.
- In the next section, I discuss Publication 6, which focuses on the potential mechanisms for adult literacy and numeracy skills gain. This publication builds on

and further explores issues discussed in the programme evaluation-focused papers in Section 6. As Publications 5 and 6 are theoretical papers reflecting on lessons learned through my empirical work, the discussion in this integrative paper of those two publications serves as the general equivalent of a Discussion section in a typical academic article.

- In the final section, I first summarise the contribution that I have made to the field of ALN through these six publications. I then discuss the ways in which this integrative paper has built on my research, and how the integrative paper itself contributes to scholarly understanding of evidence generation and use in the field of adult education in general and ALN in particular.

## **Overview of publications and my personal contribution to those publications**

This integrative paper is based on six publications in the field of adult literacy and numeracy (ALN) and the broader field of adult education. These papers, which consist of one journal article, one book chapter and four research reports, are listed below in the order in which they are discussed in this integrative paper. Publications 1-4 are the products of empirical research studies, with Publication 1 reporting on a research study funded by the European Commission, and Publications 2-4 having been commissioned by England's Department for Business, Innovation and Skills (BIS). Publications 5 and 6 are academic publications exploring key issues arising in these four empirical studies and in the field of ALN more generally. Copyright restrictions do not permit the inclusion of these six publications within the final version of this PhD by Publication; however, hyperlinks to all six publication are provided below.



1. Litster, J., Carpentieri, J., Brooks, G., Burton, M., Bosche, B., Looney, J. and Vorhaus, J. (2010). Study on European Terminology in Adult Learning for a common language and common understanding and monitoring of the sector. Brussels: European Commission. <https://ec.europa.eu/epale/en/resource-centre/content/study-european-terminology-adult-learning-common-language-and-common>
2. Tu, T., Colahan, M., Hale, C., D'Souza, J., McCallum, A., Mallows, D., Carpentieri, J. and Litster, J. (2015). Impact of poor basic literacy and numeracy on employers. BIS research paper 266. London: Department for Business, Innovation and Skills. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/497544/BIS-16-36-impact-of-poor-basic-literacy-and-numeracy-on-employers.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/497544/BIS-16-36-impact-of-poor-basic-literacy-and-numeracy-on-employers.pdf)
3. Carpentieri, J., Litster, J. and Johnson, C. (2015). International evidence review of basic skills: Learning from high-performing and improving countries. BIS research paper 209. London: Department for Business, Innovation and Skills. <http://dera.ioe.ac.uk/21819/1/bis-15-33-international-review-of-adult-basic-skills-learning-from-high-performing-and-improving-countries.pdf>
4. Cook, J., Morris, M., Cara, O., Carpentieri, J. and Creese, B. (2013). Investigating the benefits of English and maths provision for adult learners. BIS research papers 129a & 129b. London: Department for Business, Innovation and Skills. <http://dera.ioe.ac.uk/18531/>
5. Carpentieri, J. (2013). Evidence, evaluation and the tyranny of effect size: a proposal to more accurately measure programme impacts in adult and family literacy. *European Journal of Education*, Volume 48: 4 (December), 543-556. DOI: <http://onlinelibrary.wiley.com/doi/10.1111/ejed.12046/full>
6. Carpentieri, J. (2015). Adding new numbers to the policy narrative: Using PIAAC data to focus on literacy practices. In Hamilton, M., Maddox, B. and Addey, C. (Eds.) *Literacy as Numbers: Researching the politics and practices of international literacy assessment*. Pp. 93-110. Cambridge: Cambridge University Press. <http://www.cambridge.org/catalogue/catalogue.asp?isbn=9781107525177&ss=toc>

Publication 1 explores the quantity and quality of adult education-related data collection throughout Europe. In this publication, my colleagues and I analysed and catalogued adult

education data sources in more than 30 European countries, identified strengths and weaknesses in these countries' data collection strategies, and made recommendations for improving data collection in order to better support policy and programme development. I led these efforts, supervising a team of researchers in three countries (UK, France and Germany) and leading on instrument development, data collection, survey data analysis, and write-up of survey results and their implications for policymakers at EU and national levels.

Publication 2 reports on a large-scale study of employers in England, investigating the prevalence of literacy and numeracy skills gaps in English workplaces, and employer and employee responses to those gaps. This study sought to provide policymakers with evidence that would help them improve workplace-related basic skills policy. (In this integrative paper, the term 'basic skills' refers to adult literacy and numeracy.) On the mixed methods study yielding Publication 2, I worked primarily as part of the qualitative research team but also contributed to quantitative instrument development. On the qualitative side of this study, I helped to develop the interview schedule, conducted a firm-level case study, and contributed to data analysis, particularly with regard to the ways in which workplace practices may militate for and against the development of employees' literacy and numeracy skills. I was not a lead author on the report but did play a central role in the conceptualisation and writing of the report. With regard to conceptualisation, I conducted the research review<sup>1</sup> which led to that report's structure and which generated the central methodological and substantive questions the report focused on.

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<sup>1</sup> This research review is not included in this submission, but is available at [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/497550/BIS-16-48-impact-of-poor-english-and-maths-skills-on-employers-literature-review.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/497550/BIS-16-48-impact-of-poor-english-and-maths-skills-on-employers-literature-review.pdf)

Publication 3 is an analysis of adult literacy and numeracy policies and programmes in countries that performed well in the 2012 Program for the International Assessment of Adult Competencies (PIAAC) Survey of Adult Skills (OECD, 2013a). The central aim of this study was to identify policy and programme lessons that the English government could learn from in their efforts to improve national adult literacy and numeracy levels. On Publication 3, I am listed as the first author, but I did not run the research project. I served as the research lead for the qualitative strand, meaning that I developed the qualitative interview schedules, did all the qualitative data collection (desk research, document analysis, sample recruitment, and semi-structured qualitative interviews with policy and programme experts), and led on qualitative data analysis and write-up.

Publication 4 is a programme evaluation report, measuring the impact of the English government's adult literacy and numeracy programme on participants' literacy and numeracy skills. This evaluation study also included measures of programme impact on participants' literacy and numeracy practices, e.g. the frequency with which they read for pleasure and their use maths in their daily lives. (Conceptualisations of literacy and numeracy practices are discussed in detail in Section 4 of this integrative paper.) On Publication 4 I contributed to the quantitative and qualitative research strands. On the former, I led on the development of measures of participants' literacy and numeracy practices. On the qualitative strand, I played central roles in interview schedule development, data collection (interviewing participants), data analysis, and write-up. This included analysis of adults' own perspectives on the impact of the programme on their literacy and numeracy skills and practices. On the project as a whole, I played a central role in the conceptualisation of and focus on literacy and numeracy practices, both at adult level

and in terms of the project's inclusion of measures of intergenerational literacy and numeracy practices. These built on my work in the field of family literacy (e.g. Carpentieri *et al.*, 2011) not discussed in this integrative paper. I also played a central role in the project's focus on narratives and narrative analysis, methods which explore and analyse individuals' use of narratives in their self-construction of their identities, whether as learners, non-learners, parents or other roles (Riessman, 1993). I have used narrative analysis in other projects (Carpentieri and Elliott, 2014; Carpentieri *et al.*, 2016; Carpentieri *et al.*, 2017) not discussed in this integrative paper, as they are outside the field of adult education. I did not lead on the write-up of the final project reports<sup>2</sup> for Publication 4, but did make significant contributions to this write-up, working with the lead author to develop the conceptual framework for analysing everyday literacy and numeracy practices.

Publications 5 and 6 are academic publications (one journal article and one book chapter). These publications provide theoretical and methodological explorations of issues arising in the empirical studies discussed in Publications 1-4. In Publications 5 and 6 I reflect on the credibility and relevance of evidence in the field of ALN, advancing arguments on how to improve the quality and usefulness of that evidence and its relevance to policymakers and programme stakeholders. I am the sole author of both publications.

To recap, of these six publications, I am the sole author of two, the lead author of one, and a co-author of three. On two of the publications on which I am a co-author, I played a central role in the theoretical and methodological conceptualisation and conduct of the studies, and an important but less central role in the writing of the reports. On the third report in which I am a co-author, I led the primary research strand, managing a multi-national research team

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<sup>2</sup> This project produced two reports: one quantitative and one qualitative.

and leading every aspect of that strand of the study, including instrument development, data collection, data analysis and write-up. Appendix 2 contains email statements from the lead authors on all projects for which I am not myself the lead author. These statements attest to my contribution to each project.

## Theoretical framework

The six publications in this submission include four empirical studies (Publications 1-4), and two theoretical papers (Publications 5-6). Thus one way of categorising my work would be to group my publications descriptively, under the headings 'Empirical' and 'Theoretical'. However, I have adopted a more analytical approach, drawing on Berriet-Sollicet *et al.*'s (2014) typology of three types of evidence that may be generated by research:

- *Type 1: Evidence of presence*, e.g. of a social or economic problem
- *Type 2: Evidence of impact*, e.g. the impacts of programmes or policies which seek to alleviate social problems
- *Type 3: Evidence of mechanisms*, e.g. the causal processes through which a programme has positive impacts on a problem.

Type 1 evidence provides policymakers and researchers with evidence 'on the state of the world' (Berriet-Sollicet *et al.*, 2014, p. 198), i.e. the presence of social or economic problems and/or the impacts of these problems. By enabling policymakers to identify and quantify the scope and impacts of such problems, Type 1 evidence provides a starting point for policies and programmes which seek to make a positive impact on the world. In terms of adult literacy and numeracy, Type 1 evidence may consist of evidence such as the prevalence of low literacy and numeracy in a country, and the impacts of low literacy and numeracy on

individuals' lives and/or the national economy. In the field of ALN, Type 1 evidence is commonly produced through studies such as national surveys of basic skills, e.g. England's Skills for Life Surveys (DfES, 2003; BIS, 2012), and international surveys such as the PIAAC Survey of Adult Skills (henceforth referred to as PIAAC) (OECD, 2013a) and its predecessors, the International Adult Literacy Survey (IALS) (OECD, 1995, 1997, 2000) and the Adult Literacy and Lifeskills Survey (ALL) (2005, 2011). In the UK, birth cohort studies have also produced valuable Type 1 evidence of literacy and numeracy problems, their antecedents and their impacts (see e.g. Bynner and Parsons, 2006; Parsons and Bynner, 2007).

Type 2 evidence focuses on policy or programme outcomes and impacts, and is often generated through programme evaluations. For example, Publication 4 in this integrative paper reports on an evaluation of England's national adult literacy and numeracy programme, the primary aim of which was to improve participants' literacy and/or numeracy skills. Evaluations such as these seek to produce evidence of programmes' effectiveness at 'difference making' (Berriet-Sollicec *et al.*, 2014, p. 198), in these programmes' efforts to address the problems identified by Type 1 evidence. As such they focus on the degree to which programmes lead to desired outcomes.

Type 3 evidence focuses not on programme-related outcomes, but on the mechanisms through which those outcomes are achieved. Mechanisms mediate the relationship between programme contexts, inputs and activities on the one hand and programme outcomes on the other (Pawson and Tilley, 1997, 2004; Pawson, 2013). Type 3 evidence of mechanisms thus provides information on the causal pathways through which programme outcomes may be achieved, i.e. the direct and indirect routes through which programmes'

inputs and activities may lead to programmes' effects (De Vaus, 2001). As such, this type of evidence helps policy and programme stakeholders to develop and refine programmes, and the theories these programmes are based on. As will be discussed later in this integrative paper, one potential mechanism for literacy and numeracy skills gain is an increase in literacy and numeracy practices (Reder, 1994, 2009b).

Like Berriet-Sollicet *et al.* (2014), I use this tripartite evidence typology as a descriptive framework. Under the heading 'Type 1 evidence of the presence and impacts of low adult literacy and numeracy skills', I have grouped Publications 1-3. These publications include focuses on the cataloguing (Publication 1) and generation (Publication 2) of credible evidence about adult literacy and numeracy problems and the impacts of those problems. While Publication 3 does not focus on the cataloguing or generation of evidence of ALN problems, it does report on a study that was commissioned as a direct result of the publication of PIAAC findings on low adult literacy and numeracy skills. This study was thus a response to Type 1 evidence.

Publications 4-5 are grouped under the heading 'Type 2 evidence of the impacts of adult literacy and numeracy programmes'. The first of these publications reports on a programme evaluation; the second explores key theoretical and methodological tensions and issues in the field of ALN evaluation.

Publication 6 focuses on literacy and numeracy practices, and is thus categorised under the heading 'Type 3 evidence of literacy and numeracy practices as a mechanism for skills gain'.

In addition to using the Berriet-Sollicet *et al.* typology to describe my publications and structure this integrative paper, I also use this typology as an analytic framework through

which to explore the ways in which these three different types of evidence co-exist, interact and help to shape policy and programmes within the field of adult literacy and numeracy. That is, I use Berriet-Sollicec and colleagues' generic typology to explore and analyse the roles of different types of research evidence within a specific field, and to reflect on the ways in which my own research is positioned within and has contributed to that field. In doing so, I argue that each type of evidence makes an essential contribution to policy and programme development. In particular, I suggest that an increase in the amount and quality of Type 1 evidence has helped policymakers to identify, quantify and attempt to respond to the problem of low adult literacy and numeracy skills. As policymakers have grown more focused on adult literacy and numeracy, so too have they placed greater emphasis on the generation of Type 2 evidence to assess the effectiveness of programmes designed to address ALN problems. Type 3 evidence of programme mechanisms has, I argue, been largely overlooked by policymakers, to the detriment of policy and programme development.

In addition to describing different types of evidence, Berriet-Sollicec and colleagues (2014) highlight the different levels of evidence that researchers may collect. There are a range of approaches to evidence levels in the research literature (see e.g. Cartwright and Hardie, 2012 for a summary), with most such approaches producing hierarchies running from high quality systematic reviews at the top to single case observations and/or expert opinions at the bottom. While this integrative paper does describe and discuss evidence from various levels, ranging from Randomised Controlled Trials (RCTs) to expert opinion, the focus of the paper is not on levels of evidence in the field of ALN but on types of evidence, and the relationships between those types.



## **Aims and objectives of my research and this integrative paper**

A central focus of my academic career has been the complex relationships amongst research, policy making and programme development. In particular, I have focused on the challenges and benefits associated with producing credible and relevant evidence that can facilitate policy and programme improvements in the fields of adult education in general and adult literacy and numeracy in particular. By 'credible evidence' I refer to evidence that can be believed (Schwandt, 2009). By 'relevant evidence' I refer to evidence that is useful to policymakers and programme stakeholders. Publications 1-3 are underpinned by policymakers' need for credible Type 1 evidence in order to craft effective policies.

Publications 4-6, which focus on Type 2 and Type 3 evidence of programme impacts and mechanisms, emphasise the importance of relevant (as well as credible) evidence, and highlight the risks of commissioning and conducting evaluations which produce irrelevant or misguided findings.

It has been suggested (Stame, 2004) that, across policy areas, many programme evaluations suffer from a lack of relevance, because these evaluations do not provide sufficient evidence of how and why programmes work. While methodologically sound, such evaluations are theoretically limited, and do not delve into the programme's 'black box' – i.e. they do not provide sufficient evidence of the causal mechanisms through which programmes achieve impact. Nor do they provide sufficient information for programme designers seeking to improve the theories on which programmes are based. As has been argued by a number of evaluation scientists (e.g. Chen, 1990; Weiss, 1995; White, 2009; Pawson, 2013), programmes are dependent on the theories underlying them, and are unlikely to be

effective and improvable if based on inaccurate theories of how outcomes are achieved. Stame (2004, p. 58) suggests that evaluation science all too frequently finds itself in a situation in which policymakers, rightly and urgently 'moved by the need to tackle serious social problems', focus only on programme outcomes and impacts, and 'gloss over what is expected to happen [in the programme], the how and why.' This, she argues, means that evaluations are often insufficiently informative: they do not provide the ideal range and focus of evidence. In Berriet-Sollicec *et al.*'s (2014) terms, which Stame does not use, there is too much Type 2 evidence and not enough Type 3 evidence; thus there may be a glut of evaluations but a paucity of useful evaluations. In my own evaluation work, I have strived to provide both types of evidence. In Publications 5-6, I reflect on the value of doing so, and the dangers of a reductive focus on a limited range of ALN programme impacts. In particular, I emphasise the potential benefits of a joint focus on ALN skills and ALN practices. This integrative paper thus focuses on two sets of relationships. The first is the relationship between literacy and numeracy *skills* and literacy and numeracy *practices*. The second is the set of relationships amongst Berriet-Sollicec and colleagues' three types of evidence. In this paper, I use Berriet-Sollicec and colleagues' typology to extend Stame's argument about the need to look into the 'black box' of programme mechanisms. At the same time, I apply this generic typology of evidence to a specific field: adult literacy and numeracy. In particular, I argue that a lack of policy focus on Type 3 evidence of the mechanisms (literacy and numeracy practices) through which adults may improve their ALN skills leads to theoretically misinformed programme evaluations, producing Type 2 evidence that is at best insufficiently relevant and is at worst non-credible. I then propose a strategy for improving the quality of evidence available to stakeholders in the field.

## **Background to my research: policy context**

In this section I provide an overview of the policy context within which my research has been conducted. In doing so, I focus primarily on England, as this was the policy setting for five of the publications included in this integrative paper. However, as my own research (Publications 3, 5 and 6) and that of others (e.g. Reder 2009b, 2012) has shown, many of the ALN policy issues and challenges found in England are also found in other developed countries. These issues include: heightened policy focus on national skills levels; evidence suggesting that ALN policies and programmes have little short-term impact on literacy and numeracy skills; and tensions with regard to the relationship between ALN practices and ALN skills. In discussing these issues, I draw heavily on analyses found in Publications 5 and 6.

### **Heightened policy emphasis on adult literacy and numeracy skills**

Since the mid-1990s, international assessments such as IALS and PIAAC have provided a growing body of Type 1 evidence showing an unexpectedly high prevalence of poor basic skills in all developed countries, including England. These cross-sectional studies have also shown the strong correlations between poor basic skills and negative outcomes such as low wages, unemployment, poor health, and reduced social and political engagement (OECD, 2013a). Longitudinal research in Britain (Bynner and Parsons, 2006; Parsons and Bynner, 2007) has found similarly strong relationships (based on regression analysis) between low basic skills and negative life outcomes across a range of domains. Comparisons of British cohorts born in 1958 and 1970 has further suggested that the negative impacts of poor basic skills have grown over time (Bynner, 2002).

In response to such evidence, governments throughout the developed world, including England, have expanded investment in ALN policies and programmes, moving basic skills from the margins to the mainstream of educational policy (Hamilton and Hillier, 2006). In England, for example, poor results on IALS led to the highly influential Moser Report (DfEE, 1999), which proposed the establishment of a national adult literacy and numeracy strategy. This strategy, known as 'Skills for Life', featured unprecedentedly high investment in basic skills provision (NAO, 2008; Brooks, 2011). In Ireland, funding for adult literacy programmes increased 18-fold in the six years after the publication of Ireland's unexpectedly poor IALS results, following years of stagnancy (Bailey, 2006).

Heightened policy interest in ALN, both in England and elsewhere, has brought with it a heightened focus on the outcomes that are most valued by policymakers: skills gains, as measured via standardised tests. In response to the growing body of Type 1 evidence showing basic skills problems and their negative impacts, policymakers in England established extremely ambitious targets for the measurable improvement of national literacy and numeracy levels (see e.g. Leitch, 2006). As discussed in Publication 3, there have been similar focuses in most other developed countries. A partial exception to this trend has been Scotland, where policymakers have continued to emphasise a 'social practices' approach (discussed in the following section) rather than an approach centred on skills gain. But even in Scotland, skills data have been at the heart of policy, as Tett (2014) demonstrates: a 2009 're-run' of IALS in Scotland was used as justification for a continued focus on practices – but that justification was based on Scotland's relatively good scores on skills measures.

The focus on skills gains has brought criticism from many stakeholders in the field (e.g. Tett and Maclachlan, 2007), with some arguing that national basic skills policies have been too focused on programme impacts on skills and have not paid sufficient attention to other programme outcomes such as improved confidence, better mental and physical health, and increased social and political engagement. One potential reason for this, I suggest in Publication 6, is that of policy silos and targets: if the government department responsible for adult literacy and numeracy is judged on the basis of skills outcomes, it has little incentive to focus on or value outcomes in other policy areas, e.g. health and social engagement. Others, such as Pinsent-Johnson (2015, p. 202), have argued that the focus on quantifiable measures of skills and skills gain has had a detrimental impact on 'how literacy is conceptualised, taught and valued'.

As discussed in Publications 3 and 6, this heightened policy emphasis on adult literacy and numeracy skills has produced worryingly few indications of impact on national skills levels. For example, a comparison of national basic skills surveys published in 2003 (DfES) and 2011 (BIS) in England and Wales shows no improvement in basic skills levels during that period, despite globally unprecedented policy and programme investment. In Publication 6 I address potential reasons for this phenomenon, which is also evident in other countries, as seen by comparing IALS and PIAAC scores. Looking first at the most common type of adult literacy and numeracy provision, classroom-based courses delivered through colleges, the evidence for programme impact on skills is mixed, at least when those skills are measured immediately after programme completion. Some studies (e.g. Brooks, 2007; Rhys Warner *et al.*, 2008) have found that adult basic literacy and/or numeracy programme participants improved their skills, as assessed on standardised tests delivered near the start and end of

the course. However, none of these studies involved comparison groups. Comparison group studies provide less evidence of programme impact. In the US, Sheehan-Holt and Smith (2000) compared individuals who had participated in adult literacy provision in the previous year with a matched sample of adults who had not been on courses, and found no added gains from programme participation. Also in the US, the Longitudinal Study of Adult Learning (LSAL) (Reder, 2009a) followed 900 randomly selected adult high school dropouts in the Portland (Oregon, USA) area over a seven-year period (Strawn *et al.*, 2007), comparing skills gains for individuals who either did or did not participate in adult literacy and/or numeracy courses. This study found no short-term impact of programmes on participants' skills. Randomised Controlled Trials have produced similarly negative findings – e.g. four such trials discussed in Publication 6 (and later in this integrative paper) found no evidence of programme impact on participant skills.<sup>3</sup> Such findings have raised the question of whether adult literacy and numeracy courses represent worthwhile investments of taxpayer money (Sheehan-Holt and Smith, 2000).

Publication 6 also looks at the impacts of workplace literacy and numeracy programmes. Policymakers in England and elsewhere have encouraged firms to make use of such programmes, in which employers are typically subsidised to work with education providers, e.g. Further Education colleges, to provide basic skills courses for employees. National policymakers have been encouraged in this by organisations such as the Organisation for Economic Cooperation and Development (OECD), which argues that, 'from a policy

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<sup>3</sup> In Britain, a mixed methods quasi-experimental evaluation of the impacts of participation in Skills for Life provision (Metcalf and Meadows, 2009) found no statistically significant impacts of such provision on labour market outcomes four years after programme enrolment. However, this evaluation did not seek to measure skills gain. The evaluation did find programme-related improvements in non-cognitive outcomes such as self-esteem.

perspective, developing and maintaining the [basic] skills supply is not only a goal of education and training systems, but should also be an aim of workplaces' (OECD, 2013a, p. 212). One perceived advantage of such programmes is that they can attract individuals who would not enrol in classroom-based programmes (Ananiadou *et al.*, 2003). However, while there is evidence that employment itself improves literacy and numeracy skills (Reder 2009b, Bynner *et al.*, 2010), the evidence in favour of workplace ALN programmes doing so is weak at best (Wolf *et al.*, 2010; Vorhaus *et al.*, 2011): workplace programmes have generally shown limited if any positive impacts on employees' literacy and numeracy skills.

Taken together, these findings mean that policymakers now have historically high amounts of Type 1 evidence of the scope and impacts of poor basic skills. However, they appear to have little more knowledge than two decades ago about how to improve those skills.

## **Practice Engagement Theory**

Policymakers' focus on literacy and numeracy skills (as opposed to practices) is frequently associated with a view of literacy and numeracy as sets of 'portable, decontextualised' (Reder and Davila, 2005, p. 172) cognitive and technical skills that individuals can apply relatively consistently across a range of contextual settings, including home and work (Street, 1984; Green and Howard, 2007; Evans *et al.*, 2009). An implicit assumption of this 'autonomous' (Street, 1984) approach is that literacy and numeracy skills can be measured via standardised tests, and that these measurements are an accurate reflection of individuals' ALN skills.

A competing paradigm views literacy and numeracy not in terms of what people are capable of doing (i.e. skills they can apply) but in terms of what they actually do, i.e. the practices in

which individuals engage. At its most straightforward level, a practice-focused approach to ALN focuses on the literacy and numeracy activities that individuals engage in – for example, reading books, writing texts and calculating the cost of one’s groceries. In this activity-focused approach, practices are conceptualised as ‘common or typical activities or tasks’ (OECD, 1995). This approach to practices has been at the heart of a number of studies, including those by Smith (1995), Kutner *et al.* (2000), Sheehan-Holt and Smith (2000), Reder (2009a) and Shore *et al.* (2013). A more complex conceptualisation of ALN practices focuses on literacy and numeracy not primarily as individual-level activities but as social practices (Scribner and Cole, 1981; Street, 1984). Whereas the social practices approach also takes account of the ALN activities that individuals engage in, it places greater emphasis on the contextual nature of those activities and the social roles and meanings ascribed to literacy and numeracy practices by the individuals participating in them (Street, 1984). In the social practices framework, ‘practices’ is thus a more abstract concept – for example, literacy practices are not just ‘what people do with literacy’, nor are they ‘observable units of behaviour’ (Barton and Hamilton, 2000, p. 7-8) as in the studies cited above; rather, they are ‘cultural ways of utilising literacy’ which involve ‘values, attitudes, feelings and social relationships’. The social practices approach thus goes beyond ALN practices as individual-level activities, instead emphasising literacy and numeracy as social acts shaped by and embedded in context and community (Barton and Hamilton, 2000). In doing so, the social practices approach typically takes a strong epistemological stance (Esposito, *et al.*, 2014), privileging qualitative approaches to the study of practices, with a particular emphasis on ethnographic studies (e.g. Barton and Hamilton, 1998). This methodological stance contrasts with the quantitatively orientated focus adopted by the OECD, Reder and others.



While acknowledging the extremely important contribution of social practices theory to the field's understanding of adult literacy and numeracy, and while also acknowledging the dangers of viewing practices in reductive terms (Esposito *et al.*, 2014; Reder, 2009b), in this integrative paper I focus on practices in their less abstract sense, i.e. as common or typical activities or tasks that individuals engage in. As will be discussed in greater detail later in this paper, my primary rationale for doing so is a desire to follow Reder and a small number of other researchers (e.g. Sheehan-Holt and Smith; Esposito *et al.*, 2014) in bridging methodological and theoretical divides in researchers' and policymakers' approach to the relationship between practices and skills. In seeking to bridge these divides, I utilise Practice Engagement Theory (PET) (Reder, 1994, 2009b), which focuses on the role of literacy and numeracy practices in supporting the development of literacy and numeracy skills. As operationalized by Reder (2009a, 2009b) PET conceptualises skills and practices as measurable at the individual level, and posits that ALN practices and skills interact with each other, mutually and reciprocally facilitating each other's growth over time. PET thus implies that higher levels of engagement in literacy and numeracy practices lead, in the long term, to growth in literacy and numeracy skills. This hypothesis is supported by findings from the Longitudinal Study of Adult Learning (Reder, 2009a). Using longitudinally repeated measures of literacy and numeracy skills and practices, Reder (2009a) was able to test and validate PET's hypothesis that positive changes in literacy and numeracy practices would lead to improved skills in those domains. The estimated practice engagement effect was positive and statistically significant: increases in literacy and numeracy practices were associated with increases in literacy and numeracy skills at a later time point (Reder 2009a). Because study participants were tracked over a much longer time period than is possible in a typical programme evaluation, LSAL offers, in some ways, a richer picture of programme impacts

than can be found in programme evaluations focused on short- or medium-term impacts. Furthermore, as study members participated in a range of basic skills programmes, LSAL may offer greater insights into programme impacts in general, as opposed to the impacts of one programme in particular.

Coupled with the findings from LSAL, Practice Engagement Theory suggests that short-term measures of skills gain (e.g. immediately post-course, or one year later) may underestimate programme impacts on skills (Reder, 2009b). Based on these findings, Reder thus concluded that evaluators should seek to develop robust measures of practice change, and that programmes should be judged, at least in part, on their ability to bring about those changes (Reder, 2009b, 2012). This suggests a need to rethink the model underpinning programme evaluations (Reder, 2012), in order to take account of intermediary mechanisms (changes in practice) that may lead to the primary outcome desired by policymakers (changes in skill).

The evidence in support of Practice Engagement Theory matches findings in the fields of child and adolescent literacy, where it is well documented that an increase in literacy engagement, e.g. through practices such as reading for pleasure, is associated with improved reading proficiency. That is, when children and young people read more, they read better, even taking account of demographic and other background factors (Guthrie and Wigfield, 2000; Cox and Guthrie, 2001; Sullivan and Brown, 2015). The policy recommendations arising from the OECD's Program for International Student Assessment (PISA), which measures 15-year-olds' literacy and numeracy skills and practices, feature a strong emphasis on encouraging literacy and numeracy practices as a means of facilitating skills gains (OECD, 2010). These policy recommendations are underpinned by the theory that practice supports skills gain and vice versa in a virtuous cycle (Stanovich, 1986).

However, such theories have gained little policy traction in the field of adult basic skills – to the detriment, Reder (2009b, 2012) argues, of programme design and evaluation.

## **Publications 1-3: Type 1 evidence of the presence and impacts of low literacy and numeracy skills**

Publications 1-3 focus on the cataloguing, generation and response to Type 1 evidence.

Publication 1 is an example of the collection and cataloguing of such evidence, so that policymakers can better understand and monitor policies and programmes. Publication 2 is an example of an effort to improve the quality of Type 1 evidence available to policymakers.

Publication 3 is a response to Type 1 evidence from PIAAC.

### **Publication 1: Study on European Terminology in Adult Learning for a common language and common understanding and monitoring of the sector**

Publication 1 catalogues the Type 1 evidence available to adult education policymakers in Europe. While surveys such as PIAAC have provided a growing body of Type 1 evidence of poor literacy and numeracy skills in OECD countries, there remain numerous evidence gaps in adult literacy and numeracy and the field of adult education more broadly. Publication 1 sought to help address these gaps. The study was funded by the European Commission (EC) under the framework of the Action Plan on Adult Learning (European Commission, 2007), which called for (amongst other objectives) the development of a set of core data to facilitate the monitoring of adult learning in Europe. In the Action Plan, it was observed that a lack of comparable data across EU countries impeded the monitoring and understanding of the adult learning sector. This, in turn, held back policy development.

To support the Action Plan's objectives, this study explored national and EU-level data collection and use in what were then the 27 EU Member States, as well as two members of the European Economic Area (Norway and Liechtenstein), and four additional countries

(Croatia, Iceland, the Former Yugoslav Republic of Macedonia, and Turkey). A key aim of the study was to create a better understanding of existing good practice in terms of evidence collection and use, and to highlight obstacles to improvements. The study also sought to support the development of evidence-based policies for the adult learning sector through the collection of reliable data. The study's objectives thus included the:

- Identification of the range and types of data collected in the adult learning sector, including the field of adult literacy and numeracy
- Proposal of a minimum set of data needed for each country to make comparisons at European level and to advance national and EU-level policy making
- Exploration of the feasibility of developing a set of core data for monitoring the adult learning sector across Europe, including an assessment of the difficulties in collecting data, and methodological proposals for collection.

This study included a focus on cataloguing and assessing the quality of Type 1 evidence within the field of adult education, e.g. from sources such as country-level surveys of adult literacy and numeracy skills, and advancing proposals for improving the quality of the evidence available to policy makers. To identify and assess the measurement and monitoring systems being used across Europe, my research team and I developed an online survey to enable national experts to contribute key details about administrative data and surveys, and to rate the quality of those data sources. In total, information on 65 administrative data sources and 67 survey data sources was gathered, across 29 countries/regions. To the best of my knowledge, this online survey was the first of its kind in Europe.

In addition, my colleagues and I explored the challenges involved in identifying, classifying and collecting data in the adult learning sector. These challenges are considerable. In

particular, adult participation in post-compulsory learning differs in key regards to participation in compulsory education: adults enter and exit learning when they (or their employers) choose, and are not easily tracked after programme completion. Thus it is very difficult to assess programme impacts, particularly in the long term and across a broad range of policy-relevant outcome measures. At national level, my colleagues and I found that countries were at different stages in the development and implementation of adult learning strategies and were at different stages of data collection, in terms of the sophistication of their data strategies. Some countries collected few or no data beyond those required at European level; others had more advanced administrative and survey data systems. Thus some countries were producing more, and more credible, Type 1 evidence of the scope of skills needs.

In each country, survey respondents were asked to rate the quality of their data across a range of domains: participation in adult learning; attainment in adult learning; potential economic impacts of adult learning; potential health and social impacts of adult learning; the adult learning workforce; adult learning institutions; adult learning funding; and adult learning curricula/programmes. Key findings regarding data quality included:

- Only in one area, participation in adult learning, did any country rate the overall quality of their data as very good. Even in this area, in which data might be expected to be of the best quality, only two countries provided a rating of very good, and six countries rated their data as poor or very poor.
- Although instructors are likely to have a significant impact on the quality of adult education, only three countries felt that their data on adult learning instructors was good. All other countries felt that their data in this area was poor or very poor.

- Most countries rated the quality of the data collected on the impacts of adult learning, whether economic, health or social, as poor or very poor, despite the policy emphasis on demonstrating the benefits of adult learning in these areas.

The richest information on learning over the life course came from longitudinal data collected by following individuals over time. Unfortunately, such studies are rare in adult education. One exception is the British birth cohort studies, which collect some (but not extensive) data on participation in lifelong learning (Pearson, 2016).

National policymakers hoping to rely on European and international data sources found that these sources provided a fragmented picture: data were collected from different sets of countries, on different subjects, using different reference periods and different definitions, and taking different focuses. Most existing data sources provided information primarily on the inputs to education and training, such as learner participation, staffing numbers and programme costs. Only a few sources provided data on outcomes such as educational attainment, skill gains and earnings. As very few sources collected data both on inputs and outcomes, there was no clear picture of the relationship between the two.

The survey also collected evidence about barriers to more and/or better data collection on adult learning in each country, indicating whether these barriers rated as small or large obstacles to data collection. The results from this aspect of the survey suggest that neither lack of political will nor lack of policy initiatives in adult learning were seen as major barriers to gathering more and/or better data, and national adult learning systems themselves were not thought to impede data gathering. Lack of capacity in research emerged as a slightly more important barrier, with Eastern European countries more likely to cite capacity as a large or very large barrier. Funding issues were perceived as greater obstacles. A large

majority of countries responding to this question (16 out of 21 countries) cited a lack of central funding for administrative data collection as a large or very large barrier to the generation of useful evidence; a similar proportion (15 out of 20) pointed to the high cost of large-scale, high quality surveys. Funding issues were just as likely to be cited by countries with well-established adult education systems as by those with less well-established infrastructures. That said, the majority of Member States were making significant investments in PIAAC, suggesting that the collection of data on adult literacy and numeracy skills levels was a priority for many countries. However, PIAAC is a cross-sectional survey, and thus was deemed of limited use in demonstrating the economic, social and health benefits of adult learning. Thirteen (out of 22) countries rated difficulties in tracking adults over time, especially after they leave formal education settings, as a large or very large barrier to data collection.

Overall, Publication 1 concluded that at EU and national levels there was a strong need for greater investment in the production and analysis of Type 1 evidence showing the scope and impacts of skills needs. In the field of adult literacy and numeracy, my colleagues and I noted that PIAAC could play an important role in meeting these needs. However, we also concluded that there was a compelling need for longitudinal studies tracking policy and programme impacts over the longer term.

More generally, this first-of-its-kind survey helped to create a clearer picture of the European adult learning data landscape, mapping where data existed, where there were gaps, and where data was considered to be sufficiently credible, robust and reliable to be of use to policymakers. My survey and analysis thus led to a clearer picture of the Type 1 evidence that was available to policymakers throughout Europe. This cataloguing of



evidence was seen by the European Commission as an important step in their efforts to support improved policy making in the adult learning sector, including the field of ALN.

## **Publication 2: Impact of poor basic literacy and numeracy on employers**

One of the issues addressed in Publication 1 was the importance of generating robust evidence on adult literacy and numeracy needs in workplaces, in order to improve workplace-related skills policies. In many countries, the issue of literacy and numeracy in the workplace has been of great interest to policymakers – e.g. in England, the government has invested heavily in workplace basic skills programmes, on the rationale that:

1. Basic skills gaps in workplaces are high, i.e. there are a large number of workers who lack the literacy and/or numeracy skills needed to do their jobs effectively
2. These gaps have substantial impact on employers and the economy, e.g. through harming productivity.

However, employer and employee uptake of workplace basic skills programmes has been lower than expected by policymakers (Wolf *et al.*, 2010; Wolf and Evans, 2011). While some evidence (Shury *et al.*, 2010) suggests that this may be because few companies experience basic skills gaps, other evidence suggests that low literacy and numeracy is widespread in British workplaces and has major impacts on employers, employees and the economy.

Perhaps the most well-known piece of evidence influencing workplace basic skills policy in England is a 1993 study (Adult Literacy and Basic Skills Unit, 1993) that estimated the cost to UK employers of poor basic skills to be £4.8 billion per year, in 1993 currency. The credibility of this estimate has been criticised by many researchers (e.g. Robinson, 1997; Ananiadou *et al.*, 2003). Key criticisms of the ALBSU study, with which I agree (Mallows *et al.*, 2016), include its methodology, which involved extrapolations from a small and likely self-selecting

sample to the employer population as a whole. Based on this and other weaknesses, it is likely that while the ALBSU study produced Type 1 evidence of the presence and impact of workplace basic skills gaps, this evidence was not credible: it over-estimated the problem, with potentially deleterious impacts on policy development. A central aim of Publication 2 was to provide more credible estimates of workplace basic skills needs and gaps. Another aim was to investigate the reasons why employer and employee interest in workplace basic skills programmes has been lower than expected by government. The study on which Publication 2 is based thus consisted of:

- An empirical and methodological review of qualitative and quantitative evidence on the prevalence and costs of poor basic literacy and numeracy in the workforce, and the impact on employers of providing workplace basic skills training
- A nationally representative survey of 4,234 workplaces in England to estimate the prevalence of poor basic skills in the workplace, and a survey of 4,239 workplaces that have delivered public-funded basic skills training to estimate the costs and benefit of that training
- Follow-up case studies which combined participant observation and employer and employee interviews at nine purposively sampled workplaces.

In this study, a basic skills gap was defined as a situation in which at least one member of staff was seen as unable to perform certain literacy or numeracy tasks to the level required in their day-to-day job. The quantitative strand of our study found that 12% of workplaces in England reported such a gap. Workplaces were more likely to report a literacy gap than a numeracy gap (8.6% vs 6.6%). Only 3.2% of workplaces reported a gap in both.

To the government funder's surprise, employers reported little interest in workplace literacy and numeracy schemes, even in the presence of basic skills gaps and government subsidies

for programme participation. Less than one-third (32%) of workplaces with a reported basic skills gap offered ALN training, and when employers did provide training, their motives were less skills-focused than the government expected. Only 20% of employers offering training said they did so as in response to employee skills deficiencies, and fewer than half said the training was implemented to reduce waste and improve productivity. Employers were far more likely (83%) to offer basic skills training as a general benefit to staff. These results matched findings from the research review (Mallows *et al.*, 2016), which indicated that employers tend to use workplace basic skills programmes not as a mechanism for improving literacy and numeracy skills but as a means for providing a low-cost or free (because of government subsidies), general benefit to employees.

The qualitative case studies explored employees' and employers' lack of interest in workplace basic skills programmes. Key findings from these case studies included:

- Employers view basic skills as important, but as part of a broader package of other equally or more important skills, such as teamwork, communication, timekeeping and positive attitudes.
- Employers and employees alike tend to feel that it is more efficient to develop strategic workarounds for basic skills gaps than to devote time to improving basic skills.
- Employees are keen to engage in additional training to improve their workplace performance, but prefer vocational training to literacy and numeracy training.

These three factors were inter-related. My colleagues and I found that workplaces develop coping strategies to compensate for literacy and numeracy gaps among staff. Informal solutions such as peer support allowed firms to compensate for basic skills problems without having to explicitly tackle employees' literacy and numeracy skills gaps. For example, an employee who struggled to write a formal letter with correct punctuation and

grammar might routinely ask for help from a colleague, rather than enrol on a course to improve his or her writing. In recompense, the first employee would seek to provide assistance to the second colleague in other workplace tasks.

My colleagues and I also found that limitations to employees' numeracy and literacy are masked by the use of ICT tools such as software packages that provide templates for written correspondence. In our analysis, we noted that practices such as peer support and the use of ICT supports were seen as helping the workplace to function smoothly, but might also impede skills gain. PIAAC data on workplace literacy and numeracy practices show a strong correlation between engaging in ALN practices in the workplace and having higher skills (OECD 2013a), and a recent OECD working paper (Grotluschen *et al.*, 2016) suggests that providing more opportunities for literacy and numeracy practices in the workplace may be a key component in facilitating ALN skills gain. Informal workarounds may thus contribute to a low-skills equilibrium within workplaces. This issue is also raised in Publication 3: as a policymaker interviewed for that publication observed, more efficient technologies in the low-wage service sector mean that some employees engage in fewer workplace literacy and numeracy practices than before. They now only had to learn 'which buttons to push'. This means that some workers' literacy and numeracy skills might decline not despite but because of their employment, with potential impacts for future job opportunities.

In Publication 2, my colleagues and I found that employers viewed staff literacy and numeracy as part of a broader package of generic employment-related skills, and were willing to accept trade-offs within this broader package. For example, a staff member who struggled to write coherent reports but who was effective in other aspects of his job would be viewed as a 'good enough' employee, particularly given the low salaries that many

employees with low basic skills were paid. As one employer wryly observed, it was difficult and perhaps even unfair to expect good writing skills when he was paying his staff so little.

On a related note, employers and employees alike appeared to view workplace basic skills programmes as low status. For example, one employer said that he would like for some of his staff to take literacy or numeracy courses, but he felt that if he suggested that they do so, they would see it as insulting. This may be related to the stigma associated with poor literacy (EU-HLG, 2012). Employees were keen to engage in work-related training, but expressed strong preferences for vocational training rather than literacy and numeracy instruction. The evidence from our study thus suggests that the supply of literacy and numeracy training needs to be more closely aligned with the demands and interests of the workplace, and more strongly integrated into vocational courses. Other research (Casey, *et al.*, 2006) has found that when adult literacy and numeracy provision is integrated in vocational courses, learner outcomes in literacy and numeracy are better than in standalone basic skills courses.

Publication 2 addressed an important research gap in the study of workplace basic skills needs and attitudes by providing more robust Type 1 evidence than was previously available in England. This more credible evidence suggests that the workplace basic skills challenge is smaller and more nuanced than previously thought by the English government. It also corroborates other researchers' (Black, 2002; Evans *et al.*, 2009) findings that even if employees struggle with basic skills, they do not necessarily struggle in the workplace, in part because the potential negative impacts of skills gaps are mitigated by workplace practices. This finding highlights the complex interplay of practices and skills within the workplace.

Furthermore, Publication 2 uncovered reasons for the low uptake of workplace basic skills programmes noted by researchers such as Wolf *et al.* (2010), and provided new quantitative evidence that government policy objectives may not be well aligned with the objectives and perspectives of employers and employees. In Publication 6, I build on my investigations in Publication 2 by providing an analysis of the weaknesses of governments' workplace basic skills policies: in particular, I argue that an expanded policy emphasis on workplace literacy and numeracy programmes may not contribute to significant gains in national basic skills levels. This is not to say that such programmes are not valuable – Publication 3 highlights their worth in a Norwegian context, for example – but does suggest that they may not make a significant contribution to nations' basic skills targets in countries such as England.

### **Publication 3: International evidence review of basic skills: Learning from high-performing and improving countries**

Publication 1 focused on the need for more Type 1 evidence in order to support policy development, and Publication 2 sought to produce higher quality (i.e. more credible) Type 1 evidence than that which had previously informed workplace basic skills policy in England. Publication 3 is an example of a research study commissioned not to catalogue or produce Type 1 evidence, but in response to problems revealed by that evidence.

This study was commissioned by the English government in response to the publication of PIAAC figures (OECD, 2013a) indicating low levels of adult literacy and numeracy skills in England compared to other wealthy OECD countries. While Type 1 evidence helps policymakers to understand the prevalence and impact of poor literacy and numeracy skills, it does not provide them with guidance on how to address those issues. A central problem for basic skills policy and programmes in England and elsewhere in recent decades has thus

been that the growing awareness of the scope and impact of basic skills problems (via Type 1 evidence) has not been matched by an increased understanding of how to solve those problems, which persist despite increased investment in literacy and numeracy programmes. The aim of Publication 3 was thus to draw policy and programme lessons from countries who performed well on PIAAC. This mixed methods study consisted of three components: a desk review of eight highly-performing countries; quantitative analysis of PIAAC data on literacy and numeracy skills; and qualitative case studies of four of the eight countries reviewed in Stage 1. These four countries were chosen based on the potential relevance of their policy and programme messages for England. The cases studies consisted of document analysis and semi-structured interviews with policy and programme experts in each country.

The quantitative investigation found no single factor or set of factors that distinguished England from high-performing countries. As my own work in this project centred on the qualitative case studies, the discussion in the current paper will focus on messages from those case studies, the subjects of which were Canada, the Netherlands, Norway and the Republic of Korea. Adult basic skills policies and programmes vary greatly across these four countries; however, my analysis revealed a set of consistent themes. Three of these themes are relevant to this integrative paper:

1. The complex and chronic nature of the basic skills problems problem in developed countries makes the problem extremely difficult to 'solve', even in the countries which are most successful in terms of PIAAC scores.
2. Governments are increasingly interested in workplace basic skills initiatives, and feel that these initiatives can improve national skills levels. However, this belief is not underpinned by robust evidence.

3. Across the different types of adult literacy and numeracy provision, there is a dearth of high quality evaluation evidence available to policymakers.

Experts in the case study countries emphasised that there is a tendency amongst some policymakers to see the problem of poor basic skills as a 'crisis' that can be 'solved' relatively quickly if only the appropriate policies and programmes were implemented. One senior Canadian civil servant summarised the opinion of experts across all four case study countries when he suggested that politicians and policymakers without sufficient understanding of the field tend to see basic skills in somewhat naive terms. The key from this naive perspective is developing or finding a 'magic bullet' programme that leads to significant skills gain for most participants. In contrast, more experienced experts in the field characterised basic skills problems as less amenable to rapid solutions than has previously been believed. As the experts in our study argued, national basic skills strategies need to adopt a long-term focus that emphasises skills gains but also skills use, i.e. literacy and numeracy practices. However, it is challenging to adopt such a focus when policy responsibility for adult literacy and numeracy shifts from one department to another, as it has in some countries. It was also argued that basic skills strategies should focus more on the wider benefits of learning, with these benefits including improved social, civic and political engagement. Again, such a broad policy focus is challenging in situations where departments in charge of adult literacy and numeracy are judged not on achievement of cross-departmental policy aims, but on department-specific education- or employment-related targets.

Publication 3 noted that all countries felt they had significant literacy and numeracy problems, and were attempting to improve policies and programmes, but did not feel they had the answers they needed to sufficiently improve national skills levels. This was true



even for high-performing countries such as the Netherlands. Experts there felt that whereas the country had a good basic skills strategy, there were particular target groups, e.g. migrants, for whom ALN problems were very difficult to address.

All countries reported a trend towards offering more government subsidised workplace provision. This is in keeping with evidence showing that adults with poor literacy and numeracy are more likely to be employed than unemployed; it is also in keeping with what is known about skills decline over time and the need to use skills or lose them (OECD, 2013a). However, as described in Publications 2 and 6 and earlier in this integrative paper, evidence from England and elsewhere suggests that workplace literacy and numeracy programmes may have limited impacts on national skills levels, both because of the lack of impact on employee skills and their lack of alignment with employee and employer objectives. Such programmes may potentially be viewed as more successful in countries where policy objectives are better aligned with those of employers and employees. In Canada, I found greater coherence between government and employer perspectives on these issues: adult literacy and numeracy are viewed not as *the* basic skills, but as part of a broader and equally important package of 'essential skills', which include teamwork, timekeeping and communication (Gyarmati *et al.*, 2014). In Norway, the Basic Competence in Working Life initiative funds firms to work with providers to create tailored programmes for employees to improve the literacy, numeracy and digital skills needed for their job role. However, in Norway, this programme is judged not on its short-term impact on these skills, but on programme participation rates, participant satisfaction and programme impacts on non-cognitive characteristics such as self-confidence, self-concept, and literacy and

numeracy practices. Thus the programme's evaluation focuses are better aligned with outcomes that the programme is likely to achieve.

With regard to evaluation evidence more generally, all countries reported that they suffered from a limited amount of robust Type 2 evidence, making it difficult to draw conclusions on what programmes work best and why. The Netherlands was hoping to address this through a more strategic focus on the generation and use of Type 2 evaluation evidence. Experts in all countries argued that more funding needs to be invested in rigorous evaluations of literacy and numeracy initiatives, and that these evaluations need to take a broad view of the full range of programme impacts rather than focusing only on skills gains.

Publication 3 highlighted the power of Type 1 evidence – in this case, the PIAAC survey – to move governments to action. All countries in the study were, like England, working hard to improve national skills levels. However, analysis of Type 1 evidence alone is not enough, as experts in all countries stressed: while PIAAC and other survey data can provide valuable information about basic skills problems and (for example) the sociodemographic characteristics associated with such problems (St. Clair, 2012), these data sources do not themselves provide evidence of how to solve those problems. Type 1 evidence from studies such as PIAAC encourages political action, but other types of evidence (i.e. Types 2 and 3) is needed to provide direction as governments seek to improve adult literacy and numeracy skills.

## **Publications 4-5: Type 2 evidence of the impacts of adult literacy and numeracy programmes**

Both in England and elsewhere, the growing investment in adult literacy and numeracy programmes has coincided with increased policy interest in and demands for quantitative evaluations of those programmes. While basic skills courses may produce a range of positive impacts, including improvements in participants' literacy and numeracy practices, the primary focus of evaluations in the field has been programme impact on participants' literacy and numeracy skills, as measured on standardised tests. While this emphasis has been contentious (as discussed in Publication 5) it is not surprising, given that government investment in adult literacy and numeracy in England and many other countries has been in response to Type 1 evidence of the high prevalence and negative impacts of poor basic skills. As conceptualised by many governments, including England's, the primary aim of adult literacy and numeracy programmes is to improve those skills. In order to assess whether or not these programmes do so, governments typically rely on quantitative programme evaluations, which generate Type 2 evidence of programme impact. In this section, I describe one such evaluation on which I played a central role (Publication 4). I then turn to a more theoretical article (Publication 5), in which I discuss key tensions arising from and impacting on evaluation approaches in ALN, and in which I propose ways to address those tensions and improve evaluation science.

### **Publication 4: Investigating the benefits of English and maths provision for adult learners**

Publication 4 (Cook *et al.*, 2013) reports on an evaluation of England's national adult literacy and numeracy programme. The primary aim of this evaluation was to explore the impacts of

that programme on participants' literacy and numeracy skills, as measured on standardised assessments administered at two points in time. The study also looked at a range of other outcomes, including self-esteem, attitudes to learning, life satisfaction and mental well-being. The evaluation was seen by the government funder both as an impact evaluation and as an exploratory study that could inform future research and evaluation in the field. As part of this exploratory element, the study included quantitative and qualitative investigations of programme impacts on participants' literacy and numeracy practices. It should be noted that while the evaluation took account of a range of outcomes, the government funder was interested almost exclusively in programme impact on skills.

Quantitatively, 665 individuals were surveyed at two time points, with these surveys including the administration of a literacy or numeracy assessment at each time point, depending on the subject the participant was studying. The study had two primary methodological weaknesses. First, there was no comparison group. Second, the time period between assessments was shorter than desired: due to project delays at government level, the second round of interviews and assessments took place only 11-18 weeks after the first round, leaving a much shorter time period than desired by the evaluation team. The qualitative element of the study involved semi-structured interviews with 28 learners, nine of whom also recorded video diaries documenting a range of literacy and numeracy practices.

### **Programme impacts on literacy and numeracy skills**

The quantitative element of the evaluation found no statistically significant skills gains for literacy or numeracy. This finding could be due partly or wholly to the short period of time between the two assessments, but is in keeping with other evidence in the research

literature (discussed above) suggesting little to no programme impact on skills, at least as measured in the short term.

The qualitative element of the study included questions aimed at eliciting programme participants' perspectives on and narratives of programme impacts, including skills gain and changes in literacy and numeracy practices. Two of the individuals I interviewed provide useful case studies highlighting issues of central relevance to evaluation science in the field of ALN. Both individuals reported important and personally meaningful changes in their basic skills practices, and both reported context-specific skills gain – but only one was viewed as a success by the evaluation's skills-based standards. This individual, Rob (names are pseudonyms and some identifying details have been changed), was in his late 20s at the time of interview. Bullied as child, Rob had frequently played truant from school. Despite having a very able mind, he left compulsory education with poor literacy, and soon found that his lack of good reading and writing skills severely limited his career potential. After enrolling on an adult literacy programme at Entry Level 3 (PIAAC Level 1), he made rapid progress, soon achieving qualifications at that level and the next two levels up. His rapid skills gains had positive impacts on his self-confidence and his career, and only a year after first enrolling on the course, he had been promoted to a job that required extensive reading and writing, and which would have previously been out of his reach.

A second individual, Valerie, had a less dramatic but perhaps no less important trajectory. A lower Entry-level learner, Valerie had suffered from learning difficulties and depression throughout her life, and, in her mid-40s, still lived at home with her parents. She had been unemployed for a number of years. According to Valerie, one of her goals when enrolling had been to develop the skills and confidence to be able to write a postcard to a relative

when on holiday – something she had always wanted to do, but had never felt capable of. At the time of our interview, she had recently sent her first holiday postcard, and spoke of this accomplishment with great pride. She also said she was now confident enough, for the first time in her life, to use her city’s mass transit system on her own; previously she would only take a bus or train if accompanied by a family member. Since beginning the adult literacy programme, her depression had abated and she had become more socially engaged, joining a choral group. From her perspective, her adult literacy programme had been a great success, sparking an inter-related series of improvements in her confidence, literacy practices, skills, social participation and mental health. From the perspective of a test-based, skills-focused evaluation, however, her programme had been a failure. Whereas her literacy practices and some context-specific skills had improved, her more general literacy skills, as measured on a standardised assessment, had not.

While agreeing that the measurable improvement of literacy and numeracy skills is an important objective for basic skills programmes, Publication 4 suggests that the focus on that objective should not detract from a focus on other policy-relevant outcomes of programme participation, such as those experienced by Valerie. I make a similar argument in Publication 6, and have also done so in a book chapter (Carpentieri and Vorhaus, 2010) not included in this integrative paper. Drawing primarily on cohort study-based research conducted at the Centre for Research on the Wider Benefits of Learning (e.g. Feinstein *et al.*, 2003; Preston and Feinstein, 2004), that chapter provides a review of the evidence on adult education’s impacts across a range of policy areas, including social engagement and mental and physical health. The quantitative element of Publication 4, which focused on adult literacy and numeracy specifically rather than adult education more generally, found

evidence concordant with the findings of these earlier, more broadly focused studies, such as positive outcomes in life satisfaction, mental well-being, locus of control and self-esteem.

### **Programme impacts on literacy and numeracy practices**

While the primary focus of this evaluation was programme impacts on literacy and numeracy skills, my colleagues and I were also able to investigate literacy and numeracy practices. Drawing on Practice Engagement Theory, the evaluation included quantitative measures of programme impact on literacy and numeracy practices, based on measures developed by Reder (2009a). The evaluation also included qualitative investigation of adults' perspectives on programme impacts on their literacy and numeracy practices. In contrast to other studies which have looked at programme impacts on ALN practices (e.g. Sheehan-Holt and Smith 2000; Reder, 2009a), our evaluation found no quantitative evidence of improvements in literacy or numeracy practice for most participants. This finding may potentially be attributed to the short time period between survey interviews. The timing of the first interview may also be a factor: instead of being conducted near the beginning of the programme as planned, this interview took place nearly two-thirds of the way through the course. Changes in practice may have already occurred by this point.

My colleagues and I did find quantitative evidence of changes in *intergenerational practices*, i.e. the literacy, numeracy and other learning-related practices that parents engaged in with their children. Such practices and their potential impacts on children's educational attainment have been the subject of numerous studies, with the evidence indicating that improved intergenerational practices, e.g. more reading with children, are associated with better educational outcomes for those children – see e.g. Desforges and Abouchaar (2003),

Hannon *et al.* (2008), Carpentieri *et al.* (2011) and van Steensel *et al.* (2011) for overviews of that evidence.

In both rounds of interviews, parents in the study were asked about parenting-related activities and attitudes, e.g. how often they helped their children with homework and how often they read to or with their children. Comparing self-reported practices at time points 1 and 2, more than two-fifths of parents (45%) showed an increase in the frequency with which they helped their children with homework, and just under two-fifths (38%) of literacy learners showed an increase in the frequency with which they read to or with their children. Very few parents reported a decline in these practices. Around three-quarters of parents said they felt more able to help their children with homework. Almost all of these parents attributed these changes in intergenerational practices to the programme.

Looking at literacy and numeracy practices more generally, the qualitative strand of the study explored the experiences of individuals who did report increased literacy or numeracy practices. Reflecting on the perceived impacts of the programme on their practices, individuals spoke of a range of different types of practises, both old and new. These practices fell into the following categories: 1) Completely new practices; 2) New practices within old activities; 3) Old practices done with more skills and confidence. Programme participants said that their improved skills and confidence enabled them to engage in completely new practices, such as writing postcards to family members or helping their children with their maths homework. Participants also said they were engaging in old activities but no longer shying away from literacy and numeracy challenges that were part of those activities. For example, they spoke of adding up the bill when eating out, rather than leaving that task to friends or partners, or no longer avoiding forms or calculations at work.



Participants also said that they were doing their customary activities with uncustomary confidence and competence. In the home, for example, parents were doing a better and more enthusiastic job of reading with their children.

A key theme in the qualitative interviews was the development of a virtuous cycle of skills gain and skills use. Because programme participants felt more confident and skilful, they were more willing to engage in more (and more frequent) literacy and numeracy practices – and because they engaged in these practices more often, their sense of confidence and competence grew. This happened both at home and in the workplace. Individuals themselves were explicit about the symbiotic relationship of practices and skills. For example, one mother said that she had always been embarrassed to read to her children at bed time, because of her poor literacy. While she had not made sufficient progress in her course to advance to the next skills level, she had come to understand that reading to her children, even haltingly, was better than not reading to them at all. She now read to them every night, and felt that, through more frequent practice, she did so with greater confidence and competence.

Despite its flaws, this study represents a small step forward in terms of government recognition of the importance of literacy and numeracy practices, both at individual and intergenerational level. To the best of my knowledge, Publication 4 represents the first effort in England to collect quantitative Type 2 evidence of a national ALN programme's impact on practices. While my colleagues and I found no quantitative evidence of such impacts for most participants at the individual level, we did find quantitative evidence of practice impacts at the intergenerational level. The qualitative strand of the study complemented and illuminated these findings by providing Type 3 evidence, albeit only

through qualitative self-reporting, of the potential mechanisms through which ALN programmes may produce impacts on skills in the longer term. These mechanisms include a virtuous cycle in which programme participants feel more confident and inspired to engage in a range of literacy and numeracy practices, and to engage in these practices more often and across a broader range of contexts. Study participants felt that this expanded range and intensity of practice contributed to skills improvement, which in turn encouraged even greater investment in practices.

### **Publication 5: Evidence, evaluation and the ‘tyranny of effect size’: a proposal to more accurately measure programme impacts in adult and family literacy**

Publication 5 has a more theoretical and methodological focus. This article builds on my empirical work on programme evaluations in the fields of adult literacy and numeracy, as well as evaluation work in related topic areas such as family (i.e. intergenerational) literacy. My arguments in Publication 5 also draw on my work in the policy sphere, which includes serving as Policy Liaison Officer for the National Centre for Research and Development of Adult Literacy and Numeracy (NRDC) and as Rapporteur for the European Union High Level Group of Experts on Literacy, amongst other roles.

The focus of Publication 5 is how to make evaluations more relevant and useful to policy and programme development. A central argument of that publication is that evaluation approaches are often misguided, and produce results which are of little use to policymakers and which may even be harmful to programmes. These misguided evaluation approaches may be driven by a number of factors. For example, where a programme specification is overly focused on short-term skills gain, the evaluation approach may have little choice but

to make this the sole topic of analysis. In other cases, the programme may seek to produce a wide range of potentially positive outcomes – e.g. increased learner practices, confidence and identity – but the evaluation funder or researchers may be interested almost exclusively in skills gain. Many evaluations are methodologically rich but theoretically poor, producing results that paint only a partial picture of programme impacts. In many cases, these evaluations manage to be *precise* without being *accurate*: they generate relatively exact results about a particular outcome over a particular time period (i.e. have a high degree of precision), but produce inaccurate or indeed invalid findings because they do not provide sufficient insight and understanding of programme mechanisms and longer-term impacts. As the political prognosticator Nate Silver (2012, p. 45) has written with regard to political surveys, ‘This is like claiming you are a good shot because your bullets always end up in the same place — even though they are nowhere near the target’.

The primary product of the growing trend for methodologically precise quantitative evaluations is the Randomised Controlled Trial (RCT), which is generally seen as the gold standard for identifying causal relationships between interventions and outcomes (Donaldson *et al.*, 2009; Torgerson *et al.*, 2004). RCTs can help to address key questions in the field of ALN, and are an important source of evidence in this field and many others. However, most RCTs seeking to measure ALN programme impact have thus far suffered from three inter-related weaknesses. These studies have not:

1. Been sufficiently longitudinal, in that they typically compare literacy and or numeracy skills near programme start and programme end, but do not look far enough beyond the latter time point. In adopting this short-term focus, such studies do not take sufficient account of the available evidence (e.g. Reder, 2009a) regarding the time period required for adults to measurably improve their ALN skills

2. Taken account of practices as a potential mechanism for skills gain
3. Taken sufficient account of other policy-relevant outcomes of ALN programmes, e.g. potential improvements in mental and physical health.

I argue in Publication 5 that before RCTs can become the primary tool for evaluating ALN programme effectiveness, there is a strong need for a set of long-term longitudinal studies of at least 7-10 years in length conducted across a range of national settings. These longitudinal studies could help to address what I see as the key deficit in ALN programme evaluations: insufficient theoretical understanding about how adults can improve their basic skills, and how long it takes them to do so. Longitudinal studies could also help researchers to better assess the broader economic impacts of ALN programmes, by enabling researchers to track a range of non-education outcomes highlighted in the literature, including changes in employment and health, over longer periods of time. In advancing this line of reasoning in Publication 5, I argued that a more theoretically informed approach to programme evaluation would produce more relevant Type 2 evidence of programme impacts. In advancing this argument, I sought to address key tensions in the field of ALN research, and also sought to produce realistic, non-polemical recommendations for the conduct and use of adult literacy and numeracy evaluations. In that article I attempted to offer a middle ground solution between the competing claims of stakeholders who argue against the primacy of quantitative evaluation evidence in the field of ALN and those who argue in its favour. In striking this middle ground, I sought to address what I saw (and continue to see) as deep fissures within the ALN research, policy and practice communities, fissures that sometimes pit policymakers against practitioners (see e.g. Hamilton *et al.*, 2015), with researchers caught in the middle or forced to choose sides.

I have noted above that as policymakers have become more interested in adult basic skills, they have increased investment. In return for this, they have demanded more Type 2 programme evaluation evidence of programme impact. Within the field of ALN, there is a good deal of resistance to this rising role of performance accountability (Merrifield, 1998; Demetron, 2000). Critics, including practitioners and many researchers, contend that evaluator emphases on metrics such as quantitative measures of skills gain manifest a growing distrust of frontline professionals' experience and wisdom (LeGrand, 2003), and can produce a broad range of negative externalities, e.g. teaching to the test and a reduced focus on non-economic outcomes such as increased self-confidence and social engagement, and changes in ALN practices. There are worries that a return to a 'neo-positivist research agenda' (Belzer and St. Clair, 2005) is a methodological and theoretical step backward for research and policy, with negative impacts on programme participants and teachers. Based on these critiques, many adult basic skills experts have argued that ALN policy needs to reject the drift towards the rising use of quantitative data to determine programme worth, and that policymakers, practitioners and researchers should resist conceptualising literacy and numeracy as quantifiable skills that can be measured via standardised tests.

In Publication 5, I argue that while these criticisms have merits, they are ultimately a counsel of despair: rejecting quantitative evidence of programme impact will weaken rather than strengthen the field of ALN. One of the greatest challenges facing this field is its relative dearth of high quality quantitative evidence of programme impact and return on policy investment. This lack of evidence limits the capacity of policy and programme developers to compete for funding and achieve parity with other education sectors (European Council, 2006) and was a factor behind the commissioning of Publication 1, which surveyed EU data

collection in the field of adult learning. In Publication 5 I argue that basic skills policy exists in and must be understood in the broader context of a heavily contested policy environment. The modern welfare state is characterised by a demanding public and competing claims for investment (Pierson, 2001), and interventions in one policy area (e.g. adult basic skills) must compete with those in other areas (e.g. health, early childhood education and care) for government funding. Policy fields – and programmes within them – that can show good return on investment, using quantitative evaluations of impact, are at a distinct advantage. It is unrealistic to expect modern policymakers to reject quantitative data on basic skills, if they believe that basic skills are important to individual well-being and national economies. Even if policymakers did not want such data for their own departments, they would be likely to need it for the Treasuries that decide departmental budgets (Hamilton, 2012). The sensible response to the quantitative evidence of poor programme impact is thus not to avoid quantitative evaluation. Rather, it is to rethink the sorts of quantitative evidence that evaluations produce, and our theories of how programmes may influence skills.

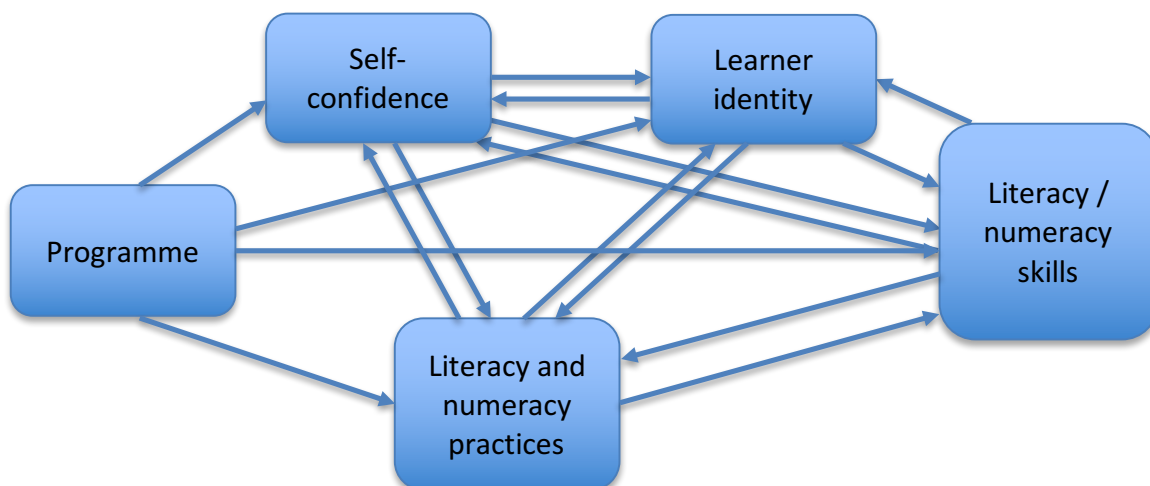
In Publication 5 I argue that evaluations need quantitative data, but that this data should not be limited to skills gain or qualification achievement. Programme evaluations should also take account of other potentially important outcomes – such as improvements in participants' self-confidence (see e.g. Tett and Maclachlan, 2007), social participation, and mental and physical health. Focusing solely on literacy gains and economic returns fails to capture a range of other, possibly unintended but socially and economically significant outcomes across a range of policy areas (Shi and Tsang, 2008; Carpentieri and Vorhaus, 2010). Publication 5 also calls for greater investigation of literacy and numeracy practices as

mechanisms potentially influencing skills gain. This would enable evaluators to develop what Pawson *et al.* (2004, p. 2) call a more 'generative' approach to evaluation, in which researchers seek to determine not just what works, but through what mechanisms and in what circumstances. Practitioners can and should play an important role in this process, by helping researchers formulate realistic, practice-based theories of programme mechanisms, outcomes and causal pathways, and helping researchers to develop evaluation designs based on such theories. Programme theory (sometimes referred to as a programme's 'theory of change') describes the direct and indirect causal pathways through which programmes are expected to produce desired outcomes (Chen, 1990; Weiss, 1995). Such pathways may be illustrated via 'logic models' (Kellogg Foundation, 2004; SRDC, 2011), as in Figures 1 and 2 below. Weiss (1995, p. 66) argues that all 'social programmes are based on explicit or implicit theories about how and why the program will work'. Pawson and Tilley (2004, p. 4) make a similar argument in advancing the case for 'realist evaluations', suggesting that interventions are by their very nature theories made manifest and are 'grounded on assumptions' about mechanisms and their relationship to outcomes.

**Figure 1: Simple linear logic model of programme impact**



**Figure 2: Complex reciprocal model of programme impact**



In Publication 5 I focus these arguments on ALN and link them to Practice Engagement Theory. Building on PET and research on the wider benefits of learning, I suggest that the theory of change underlying typical adult literacy and numeracy programme evaluations is flawed, in that it posits a more simplistic and linear relationship between programme inputs and desired outcomes (skills gains) than there is evidence to support. This is illustrated in Figure 1 and contrasted with Figure 2, which shows a more realistic model of ALN skills gain. In this more realistic model, a broader range of potential outcomes are shown, and reciprocal relationships amongst outcomes are indicated by arrows illustrating bi-directional causation. This more complex model highlights the hypothesised indirect nature of programme impact on skills gain. The model also highlights two non-cognitive outcomes – self-confidence and learner identity (Maclachlan *et al.*, 2011) – of programme participation, but could potentially (should we wish to add to the model’s complexity) include others, e.g. self-esteem and attitudes to further learning.

The imposition of simplistic, theoretically under-informed evaluation designs on programmes with more complex causal pathways, I argue, contributes to a ‘tyranny of effect



size (Carpentieri *et al.*, 2011, 2013). This ‘tyranny’ manifests itself through an over-emphasis on short-term skills gain, as measured via standardised tests, and the application of inappropriate (often overly optimistic) evaluation designs and/or programme specifications. It is often based on a what I have called a ‘shortcut’ or ‘time-compressed’ theory which postulates that a long-ingrained, ‘sticky’ problem (e.g. an adult’s poor literacy or numeracy skills) should be solved quickly and relatively straightforwardly with a dose of a solution (the programme).

As I argue in Publication 5, a key step in developing more relevant evaluation designs in ALN is the carrying out of more longitudinal studies. While the evidence regarding Practice Engagement Theory is promising, as yet there is insufficient evidence to declare that the theory is both correct and generalizable across contexts. The Longitudinal Study of Adult Learning does provide evidence of a causal relationship leading from practices to skills, but this is only one study, and may not generalise beyond the time and place in which it was conducted, or beyond its sample. Additional longitudinal studies in a range of contexts would provide much needed long-term evidence of Types 2 and 3, i.e. evidence of programme impacts and the mechanisms through which those impacts occur. This would support theory development and testing, as well as the development of more evidence-based programme evaluation models. Full-scale longitudinal evaluation would give researchers a better chance to develop a clearer understanding of the intermediary causal mechanisms that may lead to long-term desired outcomes, and to more accurately measure the possible long-term impacts of frequently noted programme outcomes, such as improved self-confidence (Tett and Maclachlan, 2007). This would then give programmes more

sensible targets (e.g. measurable improvements in literacy practices) to aim for, and would help funders make better informed decisions about programme effectiveness.

As detailed in Publication 5, there are three primary arguments against wider deployment of longitudinal evaluations. The first is that they are unwieldy: it is difficult to track adults over long periods of time. However, LSAL had excellent success doing so (Strawn *et al.*, 2007), and this success can be replicated. The second key criticism of longitudinal evaluations is that they are too expensive. While such studies are undeniably costly, a similar argument is frequently levelled at RCTs. Indeed, I suggest that, while individual RCTs are less expensive than long-term longitudinal evaluations, an RCT-based approach to assessing programme effectiveness will eventually cost more while delivering less. For example, a special issue of the *Journal of Research on Educational Effectiveness* (Miller *et al.*, 2011) reported on four large, methodologically robust RCTs which sought to measure different teaching strategies' impacts on adult literacy, comparing pre- and post-test results. The four studies found little to no improvement. Were four similar RCTs to be commissioned tomorrow, they would be likely to find similarly limited benefits. I suggest that in its current stage of development, what the field of ALN research most needs is not RCTs testing programmes' short-term impacts on skills gain, but longitudinal studies that shed light on the mechanisms and time periods which may, over time, lead to the skills gains desired by policymakers. This, I propose, is likely to prove more cost-effective in the long run.

The third primary criticism of longitudinal studies is directly related to their greatest strength: their length. Longitudinal studies may be too long for most nations' policy cycles. Few policymakers will commission evaluations that do not bear fruit until a decade or so has passed. However, such studies can and should be commissioned by national research

councils and/or the European Commission. A concentrated wave of longitudinal evaluations conducted over the next two decades would help to address many of the key outstanding issues in the field of adult literacy and numeracy, and would lay the theoretical groundwork for future, shorter-term studies that fit more realistically into national policy cycles. Once a sufficient longitudinal evidence base is built up, our theories of change should be well-developed enough for RCTs to then be strategically deployed to evaluate and compare programmes, collecting short-term measures of programme outcomes which, through longitudinal studies, have been mapped to longer term impacts, as in LSAL.

## **Type 3 evidence of literacy and numeracy practices as a mechanism for skills gain**

Type 3 evidence focuses on programme mechanisms, i.e. the causal processes through which programmes achieve their desired outcomes. As Berriet-Sollicec *et al.* (2014, p. 199) observe, Evaluation should involve ‘the production of both evidence of mechanism and evidence of difference making [i.e. programme impact], a combination which provides information about causal pathways. In certain cases, however, an evaluation is based exclusively on evidence of difference making and therefore says little or nothing about underlying causality if the causal structure is complex.’ In Publication 5, I argued that ALN programme evaluations often take too little account of programme complexity and programme mechanisms, in the form of literacy and numeracy practices. In Publication 6, I expand this focus on literacy and numeracy practices, moving from programmes to policy.

### **Publication 6: Adding new numbers to the policy narrative: Using PIAAC data to focus on literacy practices**

Reder (2009b, 2012) suggests that the findings from the LSAL have implications for evaluation science: in particular, he argues that evaluations should include a greater focus on programmes’ impact on literacy and numeracy practices, as positive changes in practices appear to contribute to long-term skills gains. Reder also suggests that policymakers should take greater account of literacy and numeracy practices, but does not appear to provide specific policy recommendations regarding how they might do so. In Publication 6 I take an explicitly policy-focused approach to literacy and numeracy practices by:

1. Exploring the implications of Practice Engagement Theory for adult basic skills policy

2. Linking PET to specific policy guidelines that I helped formulate in my role as Rapporteur for the European Union High Level Group of Experts on Literacy (EU-HLG, 2012)
3. Analysing the role of PIAAC in opening a 'policy window' (Kingdon, 1995) that could potentially pave the way for more policy attention to practices.

In doing so, I address what I see as a key conundrum in the field of adult literacy and numeracy policy in England and numerous other countries: despite historically high levels of programme investment, national literacy and numeracy skills levels do not appear to be rising. In Publication 6 I address potential reasons for this lack of skills improvement, arguing that governments in England and elsewhere have been overly optimistic in their belief that they will achieve their literacy and numeracy skills targets via a focus on classroom- and workplace-based programmes. Even if these programmes are able to produce long-term skills gains through impacts on practices – barriers to this have been discussed above – they are unlikely to have significant impact on national skills levels. This is due to the low uptake of such courses: even when adult basic skills programmes are freely available, only a small percentage of adults with poor skills have thus far chosen to participate in them (EU-HLG 2012). This is at least in part because most adults with poor skills, as measured on standardised tests, do not themselves feel their skills are in need of improvement. For example, IALS participants scoring at the lowest literacy level on that assessment (Level 1, which is equivalent to Entry Levels 1-3 in England) were more likely to rate their own reading skills as excellent (12.9%) than poor (10.6%) (OECD, 2003), and 80% of IALS participants scoring at Level 2 (equivalent to England's Level 1) rated their skills as good or excellent. High levels of participation in literacy and numeracy programmes are thus unlikely, given most adults' belief that their skills are sufficient.

## **Integrating practices into policy**

In Publication 6, I argue that by focusing greater policy and research attention on literacy and numeracy practices, governments may increase their chances of achieving their skills goals. In making this argument, I point to recent policy and data developments that coincide in a manner that may support a heightened focus on ALN practices. The analysis in Publication 6 focuses on two developments: a set of policy guidelines produced by the European Union High Level Group of Experts on Literacy (EU-HLG, 2012), and PIAAC's production of the largest ever source of quantitative data on individuals' ALN practices.

The European Union High Level Group of Experts on Literacy was an independent panel of literacy experts (academics and policymakers) created in 2011 at the behest of the European Commission. The objective of the Group, for which I served as Rapporteur, was to provide policymakers with ambitious but realistic policy guidelines for improving the literacy skills of all age groups. In its final report (EU-HLG, 2012), the High Level Group produced a range of policy suggestions, categorized under three overarching recommendations that were seen as relevant across the life course. Governments, the Group argued, should strive to:

1. Foster a more literate environment, i.e. one which encourages and supports more engagement in literacy practices
2. Improve the quality of literacy programmes in general and literacy teaching in particular
3. Reduce literacy inequalities across population sub-groups.

In advancing these recommendations, the High Level Group argued that a myopic focus on skills levels alone decreases the likelihood of long-term skills improvements, as it distracts governments from a necessary focus on the mechanisms and contextual preconditions

supporting long-term skills gain. Spurred by quantitative evidence on the negative impacts of poor skills, the Group argued, policymakers in many countries tend towards self-defeating short-termism: evidence of poor literacy and numeracy makes governments justifiably eager to improve those skills, but the policy responses adapted are not often as effective as they might be. The Group's three overarching recommendations were aimed at helping governments to improve their policy decisions.

The HLG's second and third recommendations focused on education systems in general and literacy programmes in particular, but its first recommendation emphasised the importance of literacy practices, e.g. reading for pleasure and reading with one's children. In Publication 6, I focused on this recommendation, and argued that while it was sensible and well-conceived, it was more likely to be ignored or dismissed by policymakers if there was not quantitative data that could be linked to the recommendation and used to monitor progress. This argument is related to one I made in Publication 5, in which I suggested that contemporary policymakers are in greater need than ever of quantitative evidence of programme impact in order to justify programme funding. Even if such policymakers do want to trust the judgements of front-line experts (e.g. teachers and tutors) with regard to programme effectiveness, they may be unable to do so in the modern 'evaluative state' (Neave, 1998), which increasingly requires quantitative evidence of impact. In a similar vein, policy recommendations that are not readily monitored via quantitative data may be less likely to gain political traction. This is true, I argue, whether such recommendations come from researchers, practitioners, advocacy organisations or indeed policymakers themselves. In Publication 6, I then argued that PIAAC may provide policymakers with the quantitative

data they need to shift the policy focus at least somewhat towards practices and their relation to skills.

## **PIAAC data on literacy and numeracy practices**

In earlier sections of this integrative paper, I have highlighted the importance of Type 1 evidence on literacy and numeracy skills, emphasising the central role of national and international surveys in providing evidence which has: 1) helped policymakers to identify and quantify ALN problems, and 2) spurred them to invest in programmes and policies to increase national skills levels. While PIAAC's Survey of Adult Skills (OECD, 2013a) focuses primarily on skills, it also provides an unprecedented amount of quantitative data on literacy and numeracy practices, going well beyond the more limited efforts of IALS (OECD, 1995, 1997, 2000), which included information on workplace practices but did not include data on non-workplace practices, and the ALL survey, which did include data on everyday reading practices, but included only a handful of countries (OECD, 2005). For example, to measure non-workplace literacy practices in PIAAC, the OECD developed an index of reading activities (OECD, 2013b). Participants were asked how often they read: 1) directions or instructions; 2) letters, memos or emails; 3) articles in newspapers, magazines or newsletters; 4) articles in professional journals or scholarly publications; 5) books, either fiction or non-fiction; 6) manuals or reference materials; 7) bills, invoices, bank statements or other financial statements; and 8) diagrams, maps or schematics. For each of these questions, participants could choose from the following range of responses: never; less than once a month; less than once a week but at least once a month; at least once a week but not every day; every day. Responses to these eight questions were combined to create a 'Reading at home' scale, which combined frequency and variety of reading practices. The study also provided a home



numeracy scale, and workplace-specific reading and numeracy scales. However, PIAAC was not able to produce a reliable scale for writing (OECD, 2013b, Chapter 20), meaning that the conceptualisation of literacy practices in the study is limited to reading.

In PIAAC, everyday reading and numeracy practices are well correlated with reading and numeracy skills, as are workplace reading and numeracy practices. (In England, as in all other countries participating in PIAAC's 2012 wave, the relationship between skills and everyday practices is stronger than the relationship between skills and workplace practices.) Looking at everyday literacy practices, for example, the OECD (2013a, p. 216) concluded that in all participating countries, 'adults who engage in very little reading ... score very low' in reading proficiency. Controlling for background factors, the largest skills differences in reading were between adults in the bottom two quintiles of reading practice on the one hand (i.e. those who read least frequently and across a narrower range of media types) and those in the top three quintiles on the other. Individuals in the middle quintile of reading practices scored no lower in terms of reading skills than those in the two highest quintiles. This finding was true in all countries that participated in the first wave of PIAAC, making it, I argue in Publication 6, one of the most consistent and remarkable results in the survey. This finding is also consistent with PISA (age-15) data showing that the most significant association between reading practices and reading skill is at the lower ends of the practice scale. In most countries, for example, the largest age-15 skills gaps occur between adolescents who rarely read for pleasure and those who read a moderate amount. The performance gap between moderate and heavy readers is much smaller (OECD 2010, pp. 32-34). Just as the OECD has recommended that policymakers focus on adolescents' literacy and numeracy practices as a means of improving that age group's skills, they have urged

adult-focused policymakers to pay more attention to practices, suggesting (OECD, 2013a, p. 188) that the ‘challenge to policymakers and other stakeholders, including employers and social partners, is ensuring that individuals... do not become caught in a vicious cycle in which low proficiency and limited opportunities to maintain and develop proficiency become mutually reinforcing’.

In producing this unprecedented amount of quantitative data on literacy and numeracy practices, the OECD does so in an explicitly skills-focused paradigm. For example, in PIAAC, adults who undertake everyday literacy and numeracy activities are not seen as ‘engaging in practices’, they are ‘practicing skills’ (OECD 2013a, p. 216). This individualised and instrumental conceptualisation of practices may be incompatible with the social practices approach (St.Clair, 2012), and researchers in the field are rightly wary of a reductionist focus on decontextualised literacy and numeracy practices (Esposito *et al.*, 2014; Reder, 2009b). However, it would be surprising if the OECD, an organization unabashedly focused on economic development, did conceptualise literacy and numeracy practices as an end in themselves, rather than as stepping stones to better skills. What is most significant is that, in taking literacy and numeracy practices seriously, and in producing extensive data on such practices, PIAAC has taken an important step forward, in terms of providing policymakers with Type 1 quantitative data on practices that they can incorporate into policies aimed at improving skills. In doing so, PIAAC follows the small number of scholars (e.g. Reder 2009a; Esposito *et al.*, 2014) who have sought to bridge the methodological gap characterising the study of skills and practices in the field of ALN. Traditionally, practices have been the focus of qualitative research, while quantitative analysts have focused on skills. As Reder (2009b) rightly argues, this methodological gap has likely contributed to the limited policy focus on

practices, because policymakers typically privilege quantitative evidence. PIAAC's quantitative data on practices, I argue in Publication 6, may increase the likelihood of policymaker interest in practices. This, in turn, would increase the likelihood that literacy and numeracy practices could play a greater role in mainstream adult literacy and numeracy discourses, expanding the often reductionist focus on skills.

One example of this potential expansion is the programme evaluation reported in Publication 4. While the policymakers funding the evaluation were much more interested in skills than practices, the presence of the latter in PIAAC (OECD, 2013a) may have played a role in their willingness to allow the inclusion of practices in the evaluation design. This may be an example of the opening of a 'policy window' (Kingdon, 1995), in which newly available data converges with policy and political trends to open new opportunities for policy and programme development. Fowler (2005) has shown how the launch of England and Wales' Skills for Life adult basic skills strategy in 2001 represents an example of the opening of an ALN-related policy window. In that earlier case, policy and political trends, including a highly motivated, education-focused government fearful of diminished economic competitiveness in the global market, combined with quantifiable evidence from IALS to support policy change. In Publication 6, I suggest that the coincidence of PIAAC practices data with national policymakers' need for new approaches to improving skills levels may help to open a new, practice-focused (or at least practice-inclusive) policy window.

## **Conclusion**

In the final section of this integrative paper, I first summarise the contribution that these six publications have made to research and policy. I then highlight salient themes across those publications. Following that, I discuss the ways in which this integrative paper has built on

my research, and how it contributes to understanding of evidence generation and use in the field of adult literacy and numeracy. I conclude with my aims for further research that will build on the work discussed in this integrative paper.

## **How these six publications contribute to research and policy**

The publications discussed in this integrative paper have made an important and original contribution to the understanding of adult education in general and adult literacy and numeracy in particular. These publications have done so by providing three types of evidence needed to advance the knowledge base, and to advance policy and programme development: evidence of adult literacy and numeracy problems, evidence of the impacts of programmes designed to address those problems, and evidence of the mechanisms through which basic skills gains may be supported, and thus through which programmes and policies could potentially be improved. These publications have thus made empirical and theoretical contributions to the field, advancing knowledge while also seeking to advance theory, policy and practice.

The four empirical studies described in this integrative paper have advanced the knowledge base in a range of complementary ways. Publication 1 mapped, catalogued and assessed the quality of data in the field of adult education, including ALN. In doing so, this publication addressed a significant research and policy gap throughout the EU, both at national and European levels. Publication 2 addressed a credibility problem in the study of workplace basic skills policies and programmes in England. By providing more robust and believable evidence on the scope and impacts of literacy and numeracy difficulties in English workplaces, this publication made a vital contribution to the knowledge base and to policy. Publication 2 also made an important contribution to the understanding of employer and

employee responses to basic skills challenges, illuminating the factors underlying the misalignment between government policy on the one hand (the promotion of workplace basic skills programmes) and employer and employee actions on the other. Publication 3 did not produce Type 1 evidence but did respond to it. In doing so, this publication highlighted the cross-national nature of many of the challenges faced by policymakers and programme staff seeking to improve adult literacy and numeracy skills.

Publication 4 provided Type 2 evidence of the impacts of England's national adult literacy and numeracy programme on a range of outcomes, including skills, physical and mental wellbeing, and literacy and numeracy practices. Like other large-scale evaluations in other countries, this study found no evidence of short-term programme impacts on participants' literacy and numeracy skills, as measured on pre- and post-tests. This null finding thus adds to the somewhat gloomy picture of programme (non)impacts on short-term skills gain. The evaluation did find positive impacts in other areas, including intergenerational literacy and numeracy practices. To the best of my knowledge, this is the only national adult literacy and numeracy evaluation in England to include quantitative measures of programme impacts on literacy and numeracy practices. The evaluation also included qualitative exploration of these practices, highlighting their role both as outcomes and as mechanisms potentially leading to longer-term skills gains. Like Meadows and Metcalf (2009), this evaluation also included measures of non-cognitive skills such as self-esteem, and also found positive gains in such domains.

Publications 5 and 6 were more theoretical works, building on the lessons I learned while conducting the four empirical studies above, as well as other research projects. These two publications focused on the role of literacy and numeracy practices as potential mechanisms

for long-term skills gains, with Publication 5 focusing on programme evaluations and Publication 6 focusing on ALN policy more generally. These publications add to the research and policy literature in a number of ways. Publication 5 provides a critique of evaluation science in the field of ALN, but then offers a constructive, realistic and evidence-based proposal for improving evaluation science in ALN, therefore making evaluations more relevant and useful to policymakers and other stakeholders. In doing so, Publication 5 seeks to provide a route through which methodological, theoretical and stakeholder-related tensions in the field can be addressed. Like Publication 5, Publication 6 focuses on the role of literacy and numeracy practices as mechanisms towards the improvement of literacy and numeracy skills, building on Reder's work on Practice Engagement Theory (1994, 2009b). Publication 6 extends that work by linking it to concrete policy recommendations produced by the EU High Level Group of Experts on Literacy (EU-HLG, 2012), and by analysing the role of PIAAC practice data in potentially opening a 'policy window' (Kingdon, 1995) that could increase policymakers' capacity to and likelihood of taking greater account of literacy and numeracy practices, as they seek to improve national skills levels.

### **Cross-cutting messages and themes in these publications**

While the six publications discussed in this integrative paper span a range of themes, there are a number of notable consistencies across the publications. The need for relevant and useful evaluation evidence is a central theme in Publications 4-5, but is also apparent in Publications 1 and 3. The relationship between practices and skills is a key theme in Publications 3-6, but is also seen in Publication 2, where my colleagues and I found evidence of ways in which workplace literacy and numeracy practices may impede rather than support basic skills gains.

In addition to these two cross-cutting themes, a number of others are apparent. For example, Publication 1 highlights the value of and need for longitudinal evidence showing long-term programme impacts, a theme which is central to Publication 5 and which also arises in Publications 4 and 6. Publication 3 provides evidence of other countries' increasing interest in workplace basic skills programmes, and those countries' hopes that such programmes may contribute to national skills improvements. However, Publication 2 highlights serious challenges to the achievement of that goal, at least in the English context. The workplace-related evidence in Publication 2 (published in 2016) was produced after Publication 6 (2015), but provides compelling support for the latter publication's argument that workplace programmes will not make a significant contribution to governments' skills goals. Publication 3, which was produced in 2015, highlights another issue addressed in an earlier publication (Publication 5, 2013). That latter publication argued that as governments become increasingly interested in adult literacy and numeracy skills, their approach to improving those skills may become more rather than less naive, as an increasingly broad range of policymakers in fields such as employment take an interest in the issue, and seek to produce quick changes in what is at heart a chronic rather than acute policy problem. In contrast, Publication 4's inclusion of quantitative measures of literacy and numeracy practices highlights the potential for better informed policy approaches.

### **How this integrative paper adds to my published research and contributes to the field**

In this integrative paper I have sought not just to describe my research publications, but to build on them by providing conceptual analyses that do not appear in those publications.

The most obvious such effort is my use of Berriet-Sollicet *et al.*'s (2014) evidence typology to

categorise my publications. In addition to providing a descriptive typology for my research, this approach has enabled me to critically reflect on the relationships amongst different types of evidence in the field of adult literacy and numeracy, and how those different types of evidence may influence policy and programme development. In this integrative paper, I have argued that there has been a proliferation over the last two decades of Type 1 evidence of the scope and impacts of basic skills difficulties in wealthy nations, and that this proliferation has helped to move adult literacy and numeracy from the margins of policy to the mainstream (Hamilton and Hillier, 2006). However, Type 2 evaluation evidence has suggested that adult literacy and numeracy programmes do not have an appreciable impact on skills, at least as measured in the short term.

I have then linked Berriet-Sollicet *et al.*'s evidence typology to Reder' Practice Engagement Theory (1994, 2009b) and theories of programme evaluation design (Weiss, 1995; Stame, 2004; Pawson and Tilley, 1997, 2004). In doing so, I have argued that until policymakers and programme evaluators take sufficient interest in Type 3 evidence of programme mechanisms (in the form of literacy and numeracy practices in particular), the Type 2 evidence produced through programme evaluations will continue to be insufficiently relevant and insufficiently useful to policymakers and programme developers.

Finally, coming full circle in terms of Berriet-Sollicet *et al.*'s typology, I have suggested that a policy window may be opened, through which policymakers may potentially be persuaded to pay more attention to literacy and numeracy practices as mechanisms of skills gain.

PIAAC's unprecedented production of evidence on literacy and numeracy practices, I have suggested, provides policymakers with the Type 1 evidence of scope and impact they need in order to identify and target practices as a policy issue. This Type 1 evidence, I suggest,



may enable greater focus on Type 3 evidence of mechanisms, which could in turn improve the relevance and utility of Type 2 evidence in the field.

## **Further research**

I have a number of goals for further research that will explore and potentially advance the challenges and possibilities discussed in this integrative paper. I am currently leading a mixed methods evaluation of an adult education guidance pilot targeted at low-educated individuals in six European countries. Many of the target group have low literacy and numeracy skills, and a central theoretical and methodological challenge of this evaluation is that there is limited evidence with regard to how education guidance programmes should be designed in order to improve outcomes for such adults. A key aim of the evaluation is therefore to produce longitudinal evidence of the interplay between programme contexts, mechanisms, inputs, processes and outcomes. The evaluation contains an important summative element, but is also explicitly formative, with significant focus on what happens inside the programme's 'black box', and why. The aim is to produce Type 2 and Type 3 evidence, as this combination will make the evaluation more relevant for policymakers and future programme developers in this field. The evaluation thus serves not just to measure a specific programme's impacts but to help advance the broader field (Stame, 2004; Berriet-Sollicet *et al.*, 2014). I have argued in this integrative paper that the field of ALN would benefit from a similar approach, with greater focus on the generation of Type 3 evidence of programme mechanisms now, which could then be followed by better informed programme evaluations later. Evaluation should, whenever possible, seek to advance theoretical understanding in the field in which they are being conducted, not just assess a specific programme.

Looking further ahead, I hope to procure funding for a research project which extends the work of Publication 2 by conducting in-depth employer case studies at a larger number of firms. Such a study would ideally be similar in scope and ambition to research conducted in the US at 72 firms (Bassi, 1994), and would allow for investigation of employer and employee attitudes and approaches to workplace basic skills at a larger number of employers than Publication 2 permitted. I am also interested in conducting a cross-country comparative study of workplace basic skills issues, including topics such as Norway's apparently different approach to workplace basic skills programme evaluations (in comparison to England's) and Canada's differing approach to classifying and evaluating workplace basic skills programmes.

In terms of evaluation science, I hope to conduct research investigating the ways in which a range of stakeholders in the UK and other countries address evaluation challenges in the fields of adult and family learning. Building on interviews conducted in the field of family learning in 2011, as well as findings from Publication 3 and my arguments in Publication 5, such a project would include analysis of organisational approaches to measuring and monitoring impact across a range of outcomes, and policymakers' attitudes to and expectations of evaluations.

## Appendix 1: Types of evidence produced by each publication

*Table 1: Summary of publications by evidence type and contribution to knowledge*

Publication number and title	Type of evidence	Brief summary of publication's contribution to knowledge
1. Study on European Terminology in Adult Learning for a common language and common understanding and monitoring of the sector	1: Evidence of presence	Catalogued range, scope and quality of adult education data throughout the EU
2. Impact of poor basic literacy and numeracy on employers. BIS research paper 266		Provided more credible evidence of scope, impacts and responses to workplace basic skills gaps
3. International evidence review of basic skills: Learning from high-performing and improving countries. BIS research paper 209		Analysed and compared four high-performing countries' adult basic skills policies, emphasising policy messages for England and Wales
4. Investigating the benefits of English and maths provision for adult learners. BIS research papers 129a and 129b	2: Evidence of impact	Provided quantitative and qualitative evidence regarding the impacts of provision on adults' literacy and numeracy skills and practices, including intergenerational practices
5. Evidence, evaluation and the tyranny of effect size: a proposal to more accurately measure programme impacts in adult and family literacy	2 & 3: Evidence of impact & Evidence of mechanisms	Provided an evidence-based argument for improving evaluation science through greater emphasis on: a) longer-term longitudinal studies of adult basic skills provision, and b) a broader range of programme impacts
6. Carpentieri, J. (2015). Adding new numbers to the policy narrative: Using PIAAC data to focus on literacy practices.		Analysed the role of PIAAC practices data in potentially opening a policy window, thereby facilitating a quantitative approach to practices. This would complement qualitative approaches and provide policy makers with quantitative evidence to help shape literacy and numeracy policy

## Appendix 2: Statements from co-authors verifying my personal contribution to co-authored works

Litster, J., Carpentieri, J., Brooks, G., Burton, M., Bosche, B., Looney, J. and Vorhaus, J. (2010). Study on European Terminology in Adult Learning for a common language and common understanding and monitoring of the sector. Brussels: European Commission.

I have included statements from two co-authors, Jenny Litster and John Vorhaus. Both statements are included in the same email.

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Friday, February 3, 2017 at 11:18:24 AM Greenwich Mean Time

**Subject:** RE: Statement of contribution for Phd by Publication  
**Date:** Monday, 3 October 2016 at 13:29:56 British Summer Time  
**From:** Vorhaus, John  
**To:** Litster, Jenny, Carpentieri, Jd

I agree that the statement below is an accurate account of JD Carpentieri's contribution to the Study on European Terminology in Adult Learning.

Professor John Vorhaus, Principal Investigator.

---

**From:** Litster, Jenny  
**Sent:** 03 October 2016 09:12  
**To:** Carpentieri, Jd <j.carpentieri@ucl.ac.uk>; Vorhaus, John <j.vorhaus@ucl.ac.uk>  
**Subject:** Re: Statement of contribution for Phd by Publication

I agree that the statement below is an accurate account of JD Carpentieri's contribution to the Study on European Terminology in Adult Learning.

Dr Jenny Litster, Lead Author

Department of Education, Practice and Society  
UCL Institute of Education  
[j.litster@ucl.ac.uk](mailto:j.litster@ucl.ac.uk)  
[jhlitster@gmail.com](mailto:jhlitster@gmail.com)

.....  
**Statement of contribution:**

Publication 1 [Study on European Terminology in Adult Learning for a common language and common understanding and monitoring of the sector] explores the quantity and quality of adult education-related data collection throughout Europe. In this publication, my colleagues and I catalogued and categorised adult education data throughout Europe, identified strengths and weaknesses in European countries' data collection strategies, and made recommendations for improving data collection in order to better support policy and programme development. This study consisted of two research strands: 1) a survey of European countries, to ascertain the range and quality of adult learning-related data collected in those countries; and 2) the development of a pan-European adult learning glossary. I led the first research strand, supervising a team of researchers in three countries (UK, France and Germany) and leading on instrument development, data collection, survey data analysis, and write-up of survey results and their implications for policy makers at EU and national levels.

.....  
JD Carpentieri  
UCL Institute of Education  
07802 676237  
skype: jdcarpentieri  
@jdcarpentieri

**Tu, T., Colahan, M., Hale, C., D'Souza, J., McCallum, A., Mallows, D., Carpentieri, J. and Litster, J. (2015). Impact of poor basic literacy and numeracy on employers. BIS research paper 266. London: Department for Business, Innovation and Skills.**

I have included statements from two co-authors, Trinh Tu and David Mallows. The two statements are in separate emails.

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Friday, February 3, 2017 at 11:50:44 AM Greenwich Mean Time

**Subject:** Statement of my contribution to 'Impact of poor basic literacy and numeracy on employers. BIS research paper number 266'

**Date:** Friday, 3 February 2017 at 11:50:26 Greenwich Mean Time

**From:** Carpentieri, Jd

**From:** Trinh Tu <Trinh.Tu@ipsos.com>

**Date:** Thursday, 13 October 2016 at 09:53

**To:** "Carpentieri, Jd" <j.carpentieri@ucl.ac.uk>, "Mallows, David" <d.mallows@ucl.ac.uk>

**Subject:** RE: Statement of my contribution to 'Impact of poor basic literacy and numeracy on employers. BIS research paper number 266'

Hi JD

Good to hear from you. Hope all is well with you too.

Sorry for the delay in responding – usual madness.

Yes, I am happy with the statement below. What is your PhD on?

Best

Trinh

---

**From:** Carpentieri, Jd [mailto:j.carpentieri@ucl.ac.uk]

**Sent:** 04 October 2016 13:28

**To:** Mallows, David <d.mallows@ucl.ac.uk>; Trinh Tu <Trinh.Tu@ipsos.com>

**Subject:** Statement of my contribution to 'Impact of poor basic literacy and numeracy on employers. BIS research paper number 266'

**Statement of contribution:**

This publication [Impact of poor basic literacy and numeracy on employers. BIS research paper number 266] reports on a large-scale study of employers in England, investigating the prevalence of literacy and numeracy skills needs in English workplaces, and employer and employee responses to those needs. This was a joint research project, led by Ipsos-Mori but with extensive theoretical, methodological and substantive contributions from the Institute of Education research team. Of the IOE team, I am the second author. On this mixed methods study, I worked primarily as part of the qualitative research team, but also contributed to quantitative instrument development. On the qualitative side of this study, I helped to develop the interview schedule, conducted a firm-level case study, and contributed to data analysis and write-up. With regard to conceptualisation, I conducted the research review which led to that report's structure and which generated the central methodological and substantive questions the report focused on.

Friday, February 3, 2017 at 11:49:08 AM Greenwich Mean Time

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**Subject:** Statement of my contribution to 'Impact of poor basic literacy and numeracy on employers. BIS research paper number 266'

**Date:** Friday, 3 February 2017 at 11:48:46 Greenwich Mean Time

**From:** Carpentieri, Jd

**From:** "Mallows, David" <d.mallows@ucl.ac.uk>

**Date:** Tuesday, 18 October 2016 at 17:53

**To:** "Carpentieri, Jd" <j.carpentieri@ucl.ac.uk>

**Cc:** "Trinh.Tu@ipsos.com" <Trinh.Tu@ipsos.com>

**Subject:** Re: Statement of my contribution to 'Impact of poor basic literacy and numeracy on employers. BIS research paper number 266'

Dear JD,

I agree that the statement below is an accurate description of the contribution that you made to the publication - 'Impact of poor basic literacy and numeracy on employers. BIS research paper number 266'

Best wishes

David

—

David Mallows

UCL Institute of Education, London

Tel: 00 44 782 651 6630

Skype: david.mallows

Twitter: @davidmallows

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**From:** "Carpentieri, Jd" <j.carpentieri@ucl.ac.uk>

**Date:** Tuesday, 4 October 2016 13:27

**To:** "Mallows, David" <d.mallows@ucl.ac.uk>, "Trinh.Tu@ipsos.com" <Trinh.Tu@ipsos.com>

**Subject:** Statement of my contribution to 'Impact of poor basic literacy and numeracy on employers. BIS research paper number 266'

**Statement of contribution:**

This publication [Impact of poor basic literacy and numeracy on employers. BIS research paper number 266] reports on a large-scale study of employers in England, investigating the prevalence of literacy and numeracy skills needs in English workplaces, and employer and employee responses to those needs. This was a joint research project, led by Ipsos-Mori but with extensive theoretical, methodological and substantive contributions from the Institute of Education research team. Of the IOE team, I am the second author. On this mixed methods study, I worked primarily as part of the qualitative research team, but also contributed to quantitative instrument development. On the qualitative side of this study, I helped to develop the interview schedule, conducted a firm-level case study, and contributed to data analysis and write-up. With regard to conceptualisation, I conducted the research review which led to that report's structure and which generated the central methodological and substantive questions the report focused on.

**Carpentieri, J., Litster, J. and Johnson, C. (2015). International evidence review of basic skills: Learning from high-performing and improving countries. BIS research paper 209. London: Department for Business, Innovation and Skills.**

I have included one co-author statement. (The other key author is on maternity leave.)

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Friday, February 3, 2017 at 11:19:45 AM Greenwich Mean Time

**Subject:** Re: Statement of contribution for Phd by Publication  
**Date:** Monday, 3 October 2016 at 09:13:01 British Summer Time  
**From:** Litster, Jenny  
**To:** Carpentieri, Jd

I agree that the statement below is an accurate account of JD Carpentieri's contribution to the International evidence review of basic skills.

Dr Jenny Litster, IOE Project Manager

Department of Education, Practice and Society  
UCL Institute of Education  
j.litster@ucl.ac.uk  
jhlitster@gmail.com

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**From:** Carpentieri, Jd  
**Sent:** 01 October 2016 10:40  
**To:** Litster, Jenny  
**Subject:** Re: Statement of contribution for Phd by Publication

**Statement of contribution:**

Publication 3 [International evidence review of basic skills: Learning from high performing and improving countries] is an analysis of adult literacy and numeracy policy and programmes in countries that performed well in the 2012 Program for the International Assessment of Adult Competencies (PIAAC) Survey of Adult Skills (OECD, 2013). The central aim of this study was to identify policy and programme lessons that the English government could learn from in their efforts to improve national literacy and numeracy levels. On Publication 3, I am listed as the first author, but I did not run the research project. This was done jointly by IOE's Jenny Litster and Ipsos-Mori's Claire Johnson. I served as the research lead for the qualitative strand, meaning that I developed all qualitative instruments, did all the qualitative data collection (desk research, document analysis, sample recruitment, and semi-structured qualitative interviews with policy and programme experts), and led on qualitative data analysis and write-up. I did not contribute to the quantitative work in this study.

.....  
JD Carpentieri  
UCL Institute of Education  
07802 676237  
skype: jdcarpentieri  
@jdcarpentieri

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**From:** Carpentieri, Jd  
**Sent:** 01 October 2016 10:33  
**To:** Vorhaus, John; Litster, Jenny  
**Subject:** Statement of contribution for Phd by Publication

Page 1 of 2

**Cook, J., Morris, M., Cara, O., Carpentieri, J. and Creese, B. (2013). Investigating the benefits of English and maths provision for adult learners. BIS research papers 129a & 129b. London: Department for Business, Innovation and Skills.**

I have included one co-author statement.

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Friday, February 3, 2017 at 11:21:00 AM Greenwich Mean Time

**Subject:** Statement re BIS project  
**Date:** Thursday, 16 October 2014 at 11:02:44 British Summer Time  
**From:** Marian Morris  
**To:** JD Carpentieri

Dear JD – text as follows. Hope this is what you need. I have tweaked it a bit!  
Marian

To whom it may concern:

I directed the project, commissioned by the Department for Business, Innovation and Skills (BIS), which produced the two-volume report entitled "Investigating the benefits of English and maths provision for adult learners". Alongside client-facing reports, this project produced two published reports, one for the quantitative strand of the study and another for the qualitative strand. JD was a key member of the qualitative research team. He played important roles in developing and exploring conceptual issues, and in collecting and analysing data. JD's research and teaching experience were essential contributors to the project's conceptual focus on everyday literacy and numeracy practices, which were explored through narrative eliciting qualitative interviews and participant-recorded video diaries. JD conducted and analysed qualitative interviews, and played an important role in the video diary process.

Marian Morris  
Director  
SQW  
First Floor  
43 Chalton Street  
London

Direct dial: +44(0)20 7391 4110  
Mobile: +44(0)7712 843 295  
[www.sqw.co.uk](http://www.sqw.co.uk)

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Just published on the SQW website: [Accelerating Local Economic Growth Across the UK - Clusters and Deals](#)

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**Carpentieri, J. (2013). Evidence, evaluation and the tyranny of effect size: a proposal to more accurately measure programme impacts in adult and family literacy. *European Journal of Education*, Volume 48: 4 (December), 543-556. DOI: 10.1111/ejed.12046.**

I am the sole author of this publication.

**Carpentieri, J. (2015). Adding new numbers to the policy narrative: Using PIAAC data to focus on literacy practices. In Hamilton, M., Maddox, B. and Addey, C. (Eds.) *Literacy as Numbers: Researching the politics and practices of international literacy assessment*. Pp. 93-110. Cambridge: Cambridge University Press.**

I am the sole author of this publication.

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